

NUTRITIVE VALUE OF INDIAN FOODS

by

**C. GOPALAN, B.V. RAMA SASTRI &
S.C. BALASUBRAMANIAN**

Revised & Updated by

B.S. NARASINGA RAO, Y.G. DEOSTHALE & K.C. PANT



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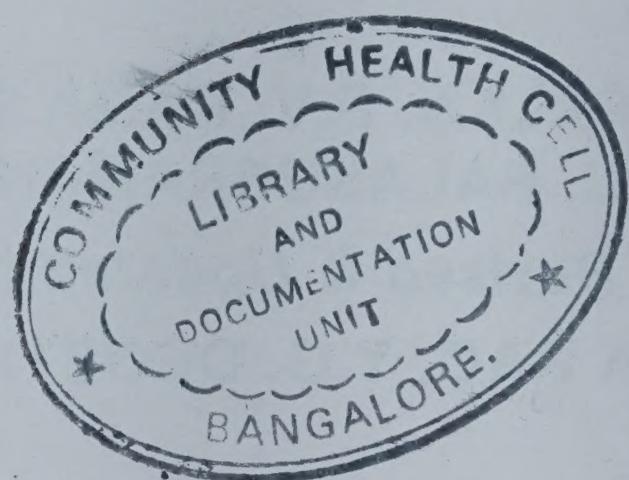
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First Edition 1971
Revised Edition 1989
Reprinted 1991
Reprinted 1993



Price Rs.18-00

0300 \$4
NUT-100

PREFACE

This hand book provides detailed information on the nutrient composition of a wide range of common Indian foods available in different parts of India. It also includes a write-up on the basic aspects of human nutrition. The nutrient composition covers 600 foods, both familiar and unfamiliar. Only those foods with confirmed scientific names have been included. Besides English, names of the foods in several Indian languages are also given for easy identification by the user. The data on nutrient composition of foods given in this book are entirely based on Indian work, mostly carried out at the National Institute of Nutrition, Hyderabad, and other research Institutes and University laboratories.

An attempt has been made to give a simple account of current concepts of nutritional principles, nutritional chemistry of major food groups and nutritional deficiency diseases, prevalent in the country. This book should be useful to the lay public as well as to the health professionals. Upto-date information on nutritional requirement and Recommended Dietary Allowances and Guidelines for formulation of nutritionally adequate diets are also given, for the benefit of professionals and informed public.

Information on nutritive value of Indian foods was published in 1937 by Dr. W.R. Akroyd. This booklet, popularly known as Health Bulletin No.23, underwent many revisions and was widely used both by the professionals and the common man. It was revised in 1971 by Drs Gopalan, Balasubramanian, and Ramasastry and published under the title "Nutritive value of Indian Foods" and reprinted several times. In view of newer information that had accumulated over the years on the nutritional composition of Indian foods and to overcome some of the shortcomings of earlier editions, it was felt necessary to revise and update the information. The revised edition contains new data on trace elements, non-nutrient composition of foods, corrected values for the nutrient content of several foods. Presentation of tables has also been modified for easy reading.

It is hoped that this publication will continue to be popular with nutritionists, planners, medical and health professionals and general public. The data presented can be used for computing the nutritive value of diets, for formulating nutritionally adequate and therapeutic diets and for planning food production on sound nutrition principles.

CONTENTS

Preface

Introduction

1. Nutrients and their functions	2-2
2. Non-Nutrient composition of foods	24-2
3. Foods and their nutrient content	27-3
4. Effect of processing on nutritive value of foods	32-3
5. Nutrient requirement and recommended dietary allowances	3
6. Habitual diets in India and their adequacy	35-3
7. Nutritional deficiencies, their prevention and control	37-39
8. Dietary Guidelines	40-4
Notes on Food Composition Tables	42-43
Food Composition Tables	45
Proximate Principles: Common foods	47-62
Vitamin Content: Common foods	63-67
Mineral and Trace elements: common foods	68-73
Proximate Principles: Less familiar foods	74-77
Vitamin Content: Less familiar foods	78-79
Mineral and Trace elements: Less familiar foods	80
Essential Amino Acids: Common foods	81-84
Essential Amino Acids: Less familiar foods	85
Fatty Acid Composition of Edible oils and fats	86
Vitamin B ₁₂ Content	87
Oxalic Acid Phytin Phosphorous and Dietary Fibre in foods	88-91
APPENDIX-I	
Recommended Dietary Allowances for Indians	92-94
APPENDIX-II	
Names of food stuffs in Indian languages	95-118
INDEX OF FOODSTUFFS	119-156

INTRODUCTION

Life can not be sustained without adequate nourishment. Man needs adequate food for growth, development and to lead an active and healthy life. Plants can manufacture the foods they need from simple chemicals derived from the soil, water and carbondioxide of the air. Higher organisms on the otherhand do not possess this capacity to manufacture food from simple chemicals and hence they depend on plants or other animals for obtaining the food they need. Procuring enough food for its survival is the main aim of life's struggle in all the higher organisms.

Animal satisfies basic food requirement mainly through natural selection, man however, has access to a wide range of foods to choose to make up his diet. Since all foods are not of the same quality from a nutritional point of view, man's ability to meet his nutritional needs and maintain good health depends upon the type and quantity of foodstuffs he is able to include in his diet to satisfy his hunger.

Dietary habits of populations in different regions of the world have been determined mainly by the availability of foods locally and local practices. Man has evolved his habitual dietary pattern to maintain good health, perhaps after a good deal of trial and error. Satisfaction of hunger is usually the primary criteria for adequate food intake. But satisfaction of hunger itself is not a safe guide for the selection of proper foods. For sustaining healthy and active life, diets should be planned on sound nutritional principles.

A brief outline of general principles and considerations that govern the planning of satisfactory diets are given in the following pages. In the section dealing with dietary principles, information is given on the importance of various nutritional constituents that are present in foodstuffs. Besides major nutrients, information on trace elements, essential fatty acid content are also included. Brief description of non-nutritional constituents of foods which are known to have

some health implications are also given.

The currently recommended dietary allowances of various nutrients for different groups of people by nutrition experts are discussed in the next section. A table giving the latest RDA for Indians is included in the appendix. In order to use these recommendations, guidelines are suggested for planning nutritionally satisfactory diets for persons belonging to different age and sex. With the prevailing diet patterns large segments of Indians are known to be deficient in one or more important nutrients and therefore hints on improving the quality of the current dietaries are also given.

Next, available information on major foods and food groups which form part of Indian dietaries, their nature, chemical composition and nutrients contributed by them and their importance in our diets is discussed.

Available information on the composition of Indian foods are given in Tables that follow the text. These tables have been considerably improved over the earlier editions by including new data on trace elements and non-nutrient composition of foods. The content of all tables have been extensively edited to eliminate errors and redundant entries etc. All familiar and commonly used foods are grouped together while data on less familiar and infrequently used foods are given separately.

Major nutritional deficiencies prevailing in the population and their health implications are briefly discussed. Apart from identifying the dietary basis of these deficiencies in the population, other environmental factors which contribute to the prevalence of nutritional deficiencies are indicated. Various intervention measures to prevent these deficiencies are also discussed. The point is made that the vulnerable groups among whom nutritional deficiencies occur more frequently and to more severe degree, require special attention and care.

1. NUTRIENTS AND THEIR FUNCTIONS

Man needs a wide range of nutrients to perform various functions in the body and to lead a healthy life. The nutrients include proteins, fat, carbohydrate, vitamins and minerals. These nutrients are chemical substances which are present in the food we eat daily. The foods containing these nutrients which we consume daily are classified as cereals, legumes (pulses), nuts and oilseeds, vegetables, fruits, milk and milk products and flesh foods (fish, meat and poultry). Most foods contain almost all the nutrients in various proportions, some foods being rich in certain nutrients. Depending on the relative concentration of these nutrients, foods are classified as protein rich foods, carbohydrate rich foods and fat rich foods etc. Some foods provide only a single nutrient as in the case of sugars which are source of only carbohydrates while oils, ghee etc. provide only fats.

Protein, fat and carbohydrate are sometimes referred to as proximate principles. They are oxidized in the body to yield energy which the body needs. Although proteins provide energy, their primary function is to provide amino acids for building body proteins. Fats, particularly the vegetable oils, besides being a concentrated source of energy, provide essential fatty acids which have a vitamin like function in the body. Together with water, which is also an essential element, the proximate principles form bulk of the diet. In plant foods, fibre (dietary fibre) which are undigestible complex molecules also contribute to the bulk and have some useful function in the digestive tract.

Vitamins and minerals do not supply energy but they play an important role in the regulation of the metabolic activity in the body and help in the utilization of the proximate principles. Minerals are also used for the formation of body structure and skeleton.

Man needs all the above nutrients, i.e. energy, protein, vitamins, minerals in different amounts to grow, live and thrive. Since man derives all the nutrients he needs through the diet he eats, his diet must be well balanced to provide all the nutrients in proper proportions. In planning a diet for the community, foods have to be chosen in proper

amounts to provide all the nutrients in required amounts and also keeping in view the dietary habits and availability of foods. Such a diet should be eaten in sufficient quantity daily to provide the needed energy and also to ensure supply of atleast a minimal quantity of essential nutrients to maintain the body functions in a proper working order.

Extensive research work carried out in man and on laboratory animals allover the world has provided information on the amount of each nutrient required by human beings at different ages. This has provided a sound basis for planning well balanced diets in terms of foods habitually consumed by the community. Based on this knowledge, it has been possible to determine whether diets in common use by different segments of the community are adequate or inadequate to meet their nutritional needs. Such information has helped to determine which foods are not consumed in enough amounts and how the present diets can be improved by including certain food stuffs. The present knowledge regarding various nutrients and the role they play in the living organism will be briefly described.

1.1 Proteins

Proteins are vital to any living organism. Proteins are the important constituent of tissues and cells of the body. They form the important component of muscle and other tissues and vital body fluids like blood. The proteins in the form of enzymes and hormones are concerned with a wide range of vital metabolic process in the body. Protein supply the body building material and make good the loss that occur due to wear and tear. Protein as antibodies helps the body to defend against infection. Thus proteins are vital to the living process and carry out a wide range of functions essential for the sustenance of life. Thus proteins are one of the most important nutrient required by the body and should be supplied in adequate amounts in the diet. The protein needed by the body has to be supplied through the diet we consume. The adequacy of protein in the diet is an important measure of adequacy and quality of a diet. The dietary proteins are broken down into

amino acids and absorbed as such and these amino acids derived from the dietary proteins are used by the body to synthesise the protein needed by the body for various functions like tissue building, replacement of protein depleted and synthesise functional molecules like enzymes, hormones and antibodies. The amino acids which are not used for protein synthesis are broken down to provide energy, 1 g of protein giving rise to 4.2 kcal. If the diet does not contain adequate carbohydrate and fat to provide energy, dietary protein may be broken down to provide energy which is a wasteful way of using proteins. Hence diet should contain adequate carbohydrate and fat to provide energy so that the proteins in the diet are most economically used for the formation of body proteins to fulfil other functions essential to life.

All foods except refined sugar, oil and fats contain protein to varying degree. Some foods contain a high amount of protein and can be classified as protein rich foods. Examples of such foods are animal foods like meat, fish and egg and plant foods like pulses, oil seeds and nuts. Milk also can be classified under this category if due allowance is made for large amount of water in it. These foods contain over 20% protein and soyabeen is the richest source containing over 40% of protein. Cereals and millets are moderate source of protein as they contain about 10% protein. Rice contains less protein (7%) than wheat and other cereals, but its quality is better. However, the cereals, as they are consumed in large amounts daily, they contribute a considerable amount of protein to the daily intake. Leafy vegetables, fruits, roots, tubers are generally poor sources of protein as they contain less than 2% protein. Defatted oil seed cakes which contain 50-60% protein are rich source of protein. Earlier, they had been used only for animal feeds (poultry, cattle) and as manure. However, in recent years, as a result of the use of improved technology of processing of these oil seeds, high quality deoiled cakes are available for human consumption also.

In recent years, unconventional sources of proteins like leaf proteins, single cell protein (SCP — viz. yeast) etc. have been proposed for human use, but they have not found wide acceptance, or their safety for human consumption (viz. SCP) fully established.

1.1.1. Biological value of proteins

In judging the adequacy of dietary proteins to meet the human needs, not only the quantity, but the nutritional quality of the dietary proteins also matters. Proteins present in different foods vary in their nutritional quality because of differences in their amino acid composition. Amino acids are the building blocks of proteins. There are 19 of them in proteins, nine of them are designated as “essential amino acids”, since they cannot be synthesised in the body the rest of the amino acids are called “non-essential” as they can be formed in the body by interconversion of other essential amino acids or synthesised from simple compounds derived from the break down of carbohydrate or fat in the body. The body derives from the dietary protein the amino acids, particularly the essential amino acids which it cannot synthesise and makes its own tissue proteins. The quality of dietary protein depends on the pattern of essential amino acids it supplies. The best quality protein is the one which provides essential amino acid pattern very close to the pattern of the tissue proteins. Egg proteins, human milk protein, satisfy these criteria and are classified as high quality proteins and serve as reference protein for defining the quality of other proteins. Apart from these proteins, the minimum amount of essential amino acids required by infants are also taken as a reference pattern for defining the quality of proteins. The quality of dietary proteins are computed on the basis of the extent to which its essential amino acid pattern deviates from that of standard reference pattern as found in egg or breast milk. This mode of chemical assessment (chemical score) does not take into account the digestibility of dietary proteins. Hence biological methods based on growth or N retention are used to determine the overall quality of a protein. Such biological measures of quality are ‘net protein utilization’ (NPU) which takes both absorption and retention and ‘biological value’ (BV) takes only retention into consideration.

The proteins of animal foods like milk, meat, fish etc. generally compare well with egg in their essential amino acid composition and are categorized as good quality proteins. They are also highly digestible. Plant proteins on the other hand are of poorer quality since EAA composition is not well balanced and a few EAA deviate much from the optimal level present in egg. For instance that

in comparison with egg protein cereal proteins are poor in amino acid lysine. Pulses and oilseed proteins are rich in lysine but they are poor in sulphur containing amino acids. Such proteins individually are therefore incomplete proteins. However, relative insufficiency of a particular amino acid of any vegetable food can be overcome by judicious combination with other vegetable foods which may have adequate level of that limiting amino acid. The amino acid composition of these proteins complement each other and the resulting mixture will have an amino acid pattern better than either of the constituent proteins of the mixture. This is the procedure normally used to improve quality of vegetable proteins. Thus a protein of cereals, deficient in lysine and pulses with adequate lysine content have a mutually supplementary effect, a deficiency of an amino acid in one can be made good by an adequate level in another, if both are consumed together. A combination of cereal and pulse in the ratio 5:1 has been found to give an optimum combination. Thus the habitual diets of vegetarians in India based on cereal and pulse has indeed a rational basis.

Another factor to be considered in assessing the value of the proteins of a food stuff is their digestibility. In general, proteins of uncooked vegetable foods (particularly pulses) are less digestible than those of animal foods. Often the low digestibility of plant proteins is due to the presence of trypsin inhibitors, which are destroyed on cooking. Soya bean has a powerful trypsin inhibitor which is destroyed only on autoclaving. Hence cooking/heat treatment improves the digestibility of proteins in several foods. Excessive heat treatment particularly dry heat treatment should be avoided since it affects the quality of vegetable proteins by making some of the essential amino acids like lysine and methionine unavailable. On excessive heating the lysine in proteins reacts with reducing sugars in foods and renders part of lysine unavailable.

From the above discussion, it is clear that the nutritive value of foods depends upon its essential amino acid make up and its digestibility. The overall quality, ie. the nutritive value of a food protein can be determined with laboratory animal like rat as follows:

- The gain in weight of young animals per unit weight of protein consumed is measured and

the value obtained used to be designated as the protein efficiency ratio (PER). Realising the some of the drawbacks of this method, in recent years, another method based on growth, called relative protein value (RPV) is used. This is the slope of the line relating level of test protein in the diet and growth expressed relative to a standard protein. Currently, RPV is recommended instead of PER as a measure of protein quality.

- The amount of N in the diet eaten and in excreta of adult animals are measured and the percentage of N retained by animals from out of N absorbed from the diet is calculated. The value thus obtained is the "biological value" (BV) of the protein. This test also gives an estimate of digestibility of the protein, ie. percent of N absorbed from the diet. A combined value of BV and digestibility is known as the net protein utilized (NPU), which gives a measure of the percent N retained out of total amount consumed. NPU can also be determined by measuring protein intake and increment body N by analysis of body N content initially and after feeding the protein for 10 days.

The BV, NPU, PER of some important food proteins are given in Table-1.

Table-1
Nutritive value of proteins of some foodstuffs.

	BV	NPU	PER
Animal proteins:			
Egg	96	96	3.8
Milk	90	85	2.8
Meat	74	76	3.2
Fish	80	74	3.5
Vegetable proteins:			
Rice	80	77	1.7
Cereals:			
Wheat	66	61	1.3
Maize	50	48	1.0
Pulses:			
Bengal gram	74	61	1.1
Redgram	72	54	1.7
Oilseeds:			
Groundnut	55		
Gingili	62		

It can be seen from the above that egg protein has the highest value as compared to other proteins and is therefore taken as a reference protein and the value of others are expressed as relative to egg (100). It is also seen that generally animal proteins are of higher biological value than proteins from plant foods. This means that as sole source of protein, animal foods as milk, egg, fish are better than vegetable foods. But diets are usually made up of mixture of proteins derived from different foods. The nutritive value of a mixture of two proteins need not be the arithmetic average of the individual value, but something higher than each value because of mutual supplementary effect. This is an illustrated case of PER of wheat, pulse and a mixture of the two. This is because of mutual supplementary effect of the component amino acids. Thus the protein value of foods even if solely of vegetable origin can be enhanced by appropriate combinations. It has infact been shown that protein value of cereals can be improved by the addition of leafy vegetables. The nutritive value of cereal protein which are deficient in lysine can be improved by addition of synthetic lysine. This calls for technolgy for fortification of cereals, but in a cereal based mixed diet, containing legumes, habitually consumed by the population lysine addition has been shown to bestow no additional benefit. In human diets in which the proteins, which are derived from mixed foods, improving protein quality by amino acid fortification has limited value.

Protein requirement.

Proteins are required for maintenance (replacing the wear and tear in tissue) in adults, for growth in infants and childrens, for fetal development in pregnancy and milk output during lactation. The relative requirement of proteins of the latter groups are higher than in adults. The actual amount of protein to be consumed daily to meet the above requirement will depend upon the quality of dietary protein. The higher the quality, lower the requirement and vice-versa. The requirement are generally determined in terms of egg and for other proteins are computed after making adjustment for the lower quality of dietary protein relative to egg. The adult requirement of egg protein is 0.7 g per kg while requirement in terms of mixed vegetable protein is 1.0 g per kg. It is to be expected that children require more protein

per unit body weight than do adults, because of new tissues which are being laid down during growth are largely built from amino acids drawn from the dietary proteins. Thus a young child of 1-2 years requires 1.2 g egg protein/kg or 2.0 g of mixed vegetable protein per kg. Likewise, protein needs of women are greater during pregnancy and lactation than during non-pregnant, non-lactating state. It also must be emphasised that figures for protein requirement are valid only when other nutrients particularly calories in diet are adequate. In other words, the diet must be a well balanced one. Recommended dietary allowances of proteins are given in appendix.

A mixed diet even solely based on plant proteins can meet the protein requirement of adults and older children, provided they consume enough of the diet to meet their energy needs. For this the protein content of the diet should be such as to contribute around 10% of the total calorie. For growing children and for women during pregnancy and lactation, the protein requirements are relatively greater and it is desirable some animal foods which have protein of high nutritive value of included in the diet of these groups of population particularly if the protein concentration in the diet is low (containing low protein cereals, roots, little of pulse etc.). The best source of animal protein for growing children is milk. Milk also provides a good amount of calcium which is normally lacking in vegetarian diets. Eggs also can be used as a source of good quality protein when ever possible. Besides providing good quality protein it provide a good amount of a wide range of other nutrients, particularly B12 which is absent in vegetable foods. Skimmed milk is a rich source of protein as whole milk. Butter milk of good quality can also serve as a source of good quality protein. Fish also is a good source of protein whenever available and acceptable and should be included in the diet, particularly of older children and adults. In devising an inexpensive well balanced diet in India, economic considerations often preclude the inclusion of milk or other animal foods in adequate amounts. As discussed earlier, a judicious mixture of plant foods like cereals and pulses and vegetables can be relatively inexpensive and at the same time can provide a mixture of proteins with nearly as good a amino acid pattern as that of expensive animal foods.

FATS

Fat is an important component of diet and serves a number of functions in the body. Fat is a concentrated source of energy and it supplies per unit weight more than twice the energy furnished by either protein or carbohydrate. It also imparts palatability to a diet and retards stomach emptying time. Presence of fat in the diet is important for the absorption of fat soluble vitamins like vitamin A and carotene present in the diet. Apart from these functions, some fats, particularly those derived from vegetable sources provide what is known as "essential fatty acids" (EFA) which has vitamins like functions in body. These essential fatty acids are also important for the structure and function of cells.

Fats in the diet can be of two kinds, the visible and invisible fat. The visible fats are those derived from animal fats like butter, ghee which are solid fats and those derived from vegetable fats like groundnut, mustard, coconut, safflower, til which are liquid fats. Hydrogenated vegetable oil known as "vanaspathi" is a solid fat and is popular in India.

These fats are triglycerides of fatty acids, both saturated and unsaturated. Saturated fatty acids predominate in animal fats and unsaturated fatty acids dominate in vegetable oils. Animal fats like ghee and butter contain vitamin A and D. These vitamins are not present in vegetable oils. However, these two vitamins can be added to hydrogenated fats (vanaspathi) which are derived from vegetable oils. Vitamin A and D can be added at a level of 700 IU and 50 IU respectively. Currently their addition is optional. Vegetable oils on the otherhand contain vitamin E, which protects the oil from oxidation.

Apart from the added or visible fat, some amount of fat is present in other food items like cereals, pulses, oilseeds, milk and egg, meat etc. This invisible fat is believed to contribute significantly to the total fat and essential fatty acid content of diet depending upon food stuffs present in the diet. Diets containing nuts, oilseeds, soyabean and avocado pear and animal foods have a higher amount of invisible fat. It was believed hitherto that cereals and pulses which form a major component of Indian diet contribute a negligible amount of fat. However, recent

improved methods of fat extraction have indicated that these articles of foods contribute a significant amount of fat in the diet. A cereal-pulse based diet not containing any added (visible) fat, can meet more than 50% of the individuals EFA needs of an adult. On the basis of these considerations it is now believed that the minimal requirement of visible fat to meet EFA requirements is in the range of 15-25 g/day for different physiological groups.

In recent years, there has been a revival of interest in the nutritional aspect of fats on two counts. One is the role of excessive intake of fat in diet in increasing the level of cholesterol in blood. Excess cholesterol in blood gradually leads to its being deposited under the lining of blood vessels, resulting in a condition known as 'atherosclerosis' in which the blood vessels are narrowed and hardened. The coronary arteries supplying blood to the heart are affected and coronary heart disease results. Extensive observations on population groups have shown that the consumption of diets in which visible fat supply, particularly of the saturated type, like animal fats is more than 30% of calories in the diet, ie. amount greater than 80 g/day, may lead to an increase in blood cholesterol. While this be so with persons leading a sedentary life, physical activity and vigorous exercise appear to help persons to tolerate higher level of fat in the diet without much increase in the blood cholesterol. Another important aspect of dietary fat is the nutritional significance of polyunsaturated fatty acids present particularly in vegetable oils which not only act as a source of essential fatty acids, but helps in the control of blood cholesterol. Like vitamins, essential fatty acids also play a role in several metabolic reactions, a deficiency of these fatty acids was believed to lead to a skin condition known as 'Phrynoderm' (toad skin) in which skin becomes rough, and think horny papules of the size of a pin head erupt in certain areas of the body, notably thighs, buttocks, anus and trunk. Recent studies have however shown that this condition responds to vitamin E and B-complex more effectively than to EFA treatment. Certain fats like butter, ghee, coconut oil and hydrogenated vegetable oils, all containing a high proportion of saturated fats have been shown to cause considerable elevation of blood cholesterol when consumed in large amounts. The polyunsaturated fatty acids present

in oils like groundnut oil, safflower or sunflower oil have also been shown to prevent an increase in serum cholesterol on a high fat diet and are thus considered antiatherogenic.

The polyunsaturated fatty acids present in oils and composed mainly of linoleic acid (18:2) are known to be useful in preventing cardiovascular diseases. In recent years however another class of polyunsaturated fatty acids belonging to linolenic acid (18:3) series, normally present in fish and fish oils are also considered to be essential for the prevention of coronary heart disease. Infact, both of these in certain ratio are found to be useful for maintaining a healthy heart.

In addition to the quantity and quality, the mode of consumption of fat also appears to influence elevation of cholesterol in blood. At the same level of total daily intake, consumption of smaller amounts of fat a number of times (frequently) during a day has been shown to cause less elevation of blood cholesterol content as compared to consumption of the same total daily fat intake at one time of the day.

The quantity of fat that should be included in a well balanced diet unlike proteins is not known with any degree of certainty. In deciding the desirable level of fat in the diet, the following facts must be kept in view: (a) the minimum amount of fat to meet the essential fatty acid requirement, (b) the amount needed to promote absorption of fat soluble vitamins, (c) providing palatability to food, (d) the undesirable effect of excessive intake of fat. The essential fatty acid requirement has been placed at 3-6% of total energy intake depending on age and physiological state. During growth, pregnancy and lactation EFA requirement are relatively higher. To obtain this level of EFA in the diet, the visible fat intake should be 15-25 g/day in terms of oils like groundnut. This amount of visible fat would not only provide the required amount of EFA, but help in absorption of fat soluble vitamins. The invisible fat present in a diet is estimated to contribute to about 6% of energy. Even a predominantly cereal based diet would provide 15 g fat, 50% of which will be EFA. This, with the 15-25 g of visible fat would meet EFA requirement of all groups. However, the upper limit of fat in the diet should not exceed 30% of calories ie. less than 80 g/day. Because of cost of

providing additional fat in the diet, diet of many poor people contain hardly any visible fat. However, the invisible fat in these diets is able to meet nearly 2/3 of the minimum requirement of EFA and hence prevalence of EFA deficiency among such population is low.

CARBOHYDRATES

Carbohydrates are a class of energy yielding substances which include starch, glucose, cane sugar, milk, sugar etc. Grain foods, and roots and tubers are largely composed of starch, a complex carbohydrate. Food ingredients like simple sugars namely cane sugar and glucose are pure carbohydrates. Starch is a complex carbohydrate made up of glucose units. Glucose derived from starch and other sugars present in the diet is the main source of energy in the body. Carbohydrates derived from cereals form chief source of energy in Indian diets. Starches when eaten in a cooked form are completely digested in the gastrointestinal tract and the released glucose is absorbed and metabolised in the body to yield energy. Starches are almost completely utilised and there being no difference between starches derived from different sources.

Besides starch and other digestible carbohydrates mentioned above, many foods contain non-digestible carbohydrates like cellulose, hemicellulose, gums, pectins and lignins. These undigestible carbohydrates are designated as 'dietary fibre' or 'unavailable carbohydrates'. These are not digested in the digestive tract and most of them are voided as such and thus contribute to the bulk of stools.

Though they do not contribute to the nutritive value of foods the presence of fibre, i.e., roughage in the diet is necessary for the mechanism of digestion and elimination of waste. The contraction of muscular walls of the digestive tract is stimulated by the fibre, thus counteracting the tendency to constipation. Lack of adequate dietary fibre in diets containing refined foods, leads to constipation and colon cancer. Also some of the dietary fibres like gums, mucilages in our diets have been shown to lower blood cholesterol in hypercholesterolemic subjects and blood glucose in diabetics. Vegetables, particularly the leafy ones, fruits, condiments spices and unrefined

cereals are comparatively rich in fibre and a generous inclusion of these provides a diet rich in fibre. Further details of dietary fibre are described on page. 25

In working out a diet schedule, the requirement of protein, fat, vitamins and minerals should be considered and carbohydrate rich foods can then be included in sufficient amounts to meet the energy needs.

In working out a diet schedule, the starch containing foods are included in adequate amounts to provide energy, paying adequate attention to dietary fibre to help bowel movement and obtain other desirable attributes. The daily diet of an adult should contain atleast 40 g of dietary fibre. Most of the Indian diets provide daily this much of dietary fibre.

ENERGY

Discussions so far have been focussed on energy yielding components of a diet, namely protein, fat and carbohydrates. This leads to the next question of how much of energy is needed by man. Energy is essential for rest, activity and growth. It is well known that even when a body is at rest, it expends certain amount of energy for essential functions such as respiration, blood circulation, digestion, absorption and excretion, maintenance of body temperature etc. The amount of energy thus expended when the body is at complete rest (both mentally and physically) is termed Basal Metabolism or Resting Metabolism. Age, sex, height and weight and state of nutrition of the individual are some of the factors that influence it. The basal metabolism for a given age and sex is taken as the starting point for computation of the total energy requirement of individuals. Activity including manual work, which can be light or heavy, calls for additional supply of energy. Even in absence of manual work, individuals have to do a minimal activity like sitting, studying, walking, dressing etc. which is called 'maintenance' energy for which roughly 1.5 times of basal energy is needed. The energy required for both basal metabolism and muscular activity have to be supplied through food. The three components of foods which provide this energy are carbohydrates, fat and protein. Proteins normally supply 10-12% of energy in most diets;

energy that carbohydrate and fat contribute may vary from diet to diet. It is desirable that the energy from fat should not exceed 30% and the rest may be derived from carbohydrate (60%). However in diets of poor population in developing countries, though 9-10% of energy is provided by proteins, more than 80% of energy comes from carbohydrates.

In drawing up new diet schedules or in assessing the value of existing ones, the question often posed is whether greater importance should be attached to quantity or quality. Naturally, ensuring both is obviously most desirable. But where assigning a priority is inevitable, the question of providing enough food, i.e. quantity should take preference over quality considerations. It is comparatively easy to decide whether or not enough food is being provided because in absence of enough food complaints of hunger can reasonably be expected. Unfortunately, experience has shown that man can adapt himself to low intakes of foods resulting in impaired working efficiency and low level of vitality, without realising that he is underfed. Low intakes throughout life impair growth and development resulting in low body size and low vitality and in turn reduce food requirements. The nutrition worker in setting up standards for food requirement ignores and justifiably so, the remarkable ability of body to adapt to mild degree of starvation. He aims at not mere survival but positive health with all faculties at an optimal level of working efficiency.

Quantitative food requirements are usually estimated in terms of energy, ie. calories. The unit of energy hitherto used was physiological calories (also called kilo calories — Kcal) which is the amount of heat necessary to raise the temperature of one kilogram of water by 1°C from 14.5°C to 15.5°C. This is 1000 times the physical caloric unit. Whenever calorie as a unit is mentioned in the text, it is the physiological calorie or kilocalorie. In recent years a new unit of energy has been adapted and Kcal is very slowly being replaced with this new unit. The new unit energy is joule, which is adopted by the International Union of Nutritional Sciences. A Joule (J) is defined as the energy required to move 1 kg mass 1m by 1 Newton. One Newton is the force needed to accelerate 1kg by 1 m per sec^2 .

The relationship between Joule and calorie is as follows:

$$\begin{aligned}
 1 \text{ Cal.} &= 4.184 \text{ joule (physical unit)} \\
 1 \text{ kilocalorie} &= 4.184 \text{ kilojoule (KJ)} \\
 (\text{physiological unit}) &= 4.184 \text{ Megajoule (MJ)} \\
 1000 \text{ Kilocalorie} & \\
 (\text{physiological unit}) &= 4.184 \text{ Megajoule (MJ)}
 \end{aligned}$$

For practical nutrition work however it is suggested that the factor of 4.2 can be used for conversion of kilocalories to kilojoules.

The energy value of foods can be determined by burning food in a 'Bomb calorimeter' and measuring the heat produced. However, it is often more easily calculated from the analysis of foods for proteins, fat and carbohydrates and multiplication of the content of these components with appropriate factors. One g of carbohydrate or protein yield 4 kcal (16.8 KJ) and one g of fat yield 9 kcal (37.8 KJ). This is how the energy content given in the tables are derived. However, it must be pointed out that carbohydrate content of foods have been derived by difference, subtracting water, protein, fat, mineral and crude fibre content. As discussed earlier foods contain undigestible carbohydrates besides crude fibre. If they are present in any significant amount, the energy content would be overestimated by the above procedure. Then the energy values given in these tables can be appropriately corrected by taking into account the unavailable carbohydrate (dietary fibre) content of foods.

As pointed out earlier, the total energy requirement of an individual is made up of two main components: (a) basal or resting energy requirement for such vital functions as respiration, circulation, etc. (b) the energy required for the actual physical activity of the individual. It is the latter component that varies depending on the type of occupation of an individual. Although there is large variation from individual to individual in occupational activity, for the sake of computation of energy requirement, occupations have been classified as light, moderate and heavy.

The energy requirement of Indians was recommended by an Expert Group in 1944 and later revised in 1958. The 1958 figures were adopted by the ICMR Expert Group in 1978 also. These figures were however revised by the ICMR

Expert Group of 1988 and are given in appendix.

Practical nutrition work often involves the assessment of the intake of a group of persons. In such cases, it is usual to assess the needs of women and children in terms of those of the average man by applying appropriate coefficients to the different age and sex groups. The following coefficients of calorie consumption have been suggested for practical nutrition work in India. (Table-2).

The energy consumption of an average male during a sedentary work is taken as one unit and the other coefficients are worked on the basis of their calorie requirements relative to that of a sedentary man. One unit of coefficient corresponds to energy requirement of 2400 kcal/day. It must be emphasised that the above scale of coefficients are applicable only to energy and it must not be applied in assessing the needs for other nutrients.

It can be seen from the table on recommended dietary allowances (appendix) that the energy requirement of a woman is lower than that of a man of corresponding age. During pregnancy and lactation however, the needs of women are more and they may equal or even exceed the needs of a man because of additional need to nourish the child in the womb or at the breast.

Table-2
Coefficient for computing calorie requirement of different groups

Group	Cu-Units
Adult male (sedentary worker)	1.0
Adult male (moderate worker)	1.2
Adult male (heavy worker)	1.6
Adult female (sedentary worker)	0.8
Adult female (moderate worker)	0.9
Adult female (heavy worker)	1.2
Adolescents — 12 to 21 years	1.0
Children — 9 to 12 years	0.8
Children — 7 to 9 years	0.7
Children — 5 to 7 years	0.6
Children — 3 to 5 years	0.5
Children — 1 to 3 years	0.4

Table-2 (Contd)

Classification of activities based on occupations

Sedentary:

Male:

Teacher, Tailor, Barber, Executives, Shoemaker, Priest, Retired Personnel, Land-Lord, Peon, Postman, etc.

Female:

Teacher, Tailor, Executives, Housewife, Nurses, etc.

Moderate:

Male:

Fisherman, Basket-maker, Potter, Goldsmith, Agricultural labour, Carpenter, Mason, Rickshaw-puller, Electrician, Fitter, Turner, Welder, Industrial labour, Cooli, Weaver, Driver, etc.

Female:

Servant-maid, Cooli, Basket-maker, Weaver, Agricultural labour, Beedi-maker, etc.

Heavy:

Male:

Stone-cutter, Blacksmith, Mine-worker, Wood-cutter, Gang-man, etc.

Female:

Stone-cutter

The total energy requirement of various age groups can also be expressed in terms of basal energy requirement values. Such an expression takes care of differences in energy requirement due to age, growth etc. Since BMR values are available for a large number of subjects, computation of energy in any group becomes convenient. This procedure is employed by the recent FAO/WHO/UNU Committee on Energy and Protein Requirements. This approach has also been adopted by the Expert Group of the ICMR of 1988 in arriving at energy needs of Indians.

The energy consumption on diets can be worked out with the help of the food composition tables and compared with suggested requirements. Similarly diet schedules (Balanced Diets) yielding

approximately the right amount of energy can be constructed with the help of these tables. In dealing with the energy intakes of a group of mixed age and sex composition, the number of "consumption units" in the group is first calculated. For example, a family consisting of father doing sedentary work and mother and three children aged 10, 8 and 6 yrs. has an 'adult man' equivalent or consumption units of 3.9 (i.e. $1.0 + 0.8 + 0.8 + 0.7 + 0.6$) and the daily energy requirement of the family would be 2400×3.9 or 9400 kcals. If it is necessary to draw up a diet schedule for the family, foods supplying 9400 kcal should be provided. If analysis of the existing diet of the family indicates that the total calorie intake per day is below this level, attempt should be made to make good the deficiency.

Sound common sense must be exercised in drawing up either a new diet schedule or correcting inadequacies in the existing diets. It is safer to err on the side of excess by 100 to 200 kcals to allow for waste of all kinds. Standards of energy requirement are applicable to a group of reasonably large number of people and not to individuals. The relation between energy requirements and such factors as body weight (in case of adults) activity, age should be borne in mind. Procedure for making such adjustments are given in the document of Recommended Dietary Allowances (RDA). However, body weight adjustments are not to be made in case of growing children, the level recommended for the age should be provided (even if the body weight is lower than normal) in such cases.

VITAMINS

Vitamins are organic substances present in small amounts in many foods. They are required for carrying out many vital functions of the body and many of them are involved in the utilization of the major nutrients like proteins, fat and carbohydrates. Although they are needed in small amounts, they are essential for health and well being of the body. When these vitamins were discovered on the basis of their function and before their chemical nature fully elucidated, they used to be designated by affixing the letter A, B, C, D or in terms of their major functions, viz. antixerophthalmic, antineuritic, antiscorbutic and

antirachitic vitamins. After establishing the chemical nature of these vitamins, they are now referred to by their chemical names such as retinol, thiamin, riboflavin, ascorbic acid and cholecalciferol.

Fat soluble vitamins.

Vitamins can be broadly classified as water soluble and fat soluble vitamins. B-complex vitamins and ascorbic acid belong to the former group while vitamin A,D,E,K are the fat soluble vitamins. Water soluble vitamins are not accumulated in the body, but are readily excreted while fat soluble vitamins are stored in the body. For this reason, excessive intake of fat soluble vitamins, vitamin A and D can prove toxic.

Retinol (Vitamin A)

A well understood function of retinol is in the visual process. Vitamin A is necessary for clear vision in dim light. Lack of vitamin A thus leads to night blindness. Another function of vitamin A is to maintain the integrity of epithelial tissues. For example in the absence of adequate vitamin A intake, the outer lining of the eye ball loses its usual moist white appearance and becomes dry and wrinkled. Redness and inflammation of the eye and gradual loss of vision may follow. The central portion of eye (cornea) may lose its transparency and become opaque and soft and if not treated may lead to total blindness. Its function in vision and eye is well understood but not its other functions. Although its function growth and integrity of other epithelial tissues is known the manner in which these functions operate is not understood clearly.

Vitamin A or retinol is present in some animal foods like butter and ghee, whole milk, curds, egg yolk, liver etc. The liver oils of certain fish like cod, halibut and shark and saw fish are some of the richest known natural sources of the vitamin. Vitamin A is not present as retinol in vegetable foods. These foods contain yellow pigments called carotenes which are converted into vitamin A in the body. Carotenes are therefore termed provitamin A. Since these pigments were isolated from carrots, they are called carotenes. There are different types of carotenes, α , β and γ and of these β -carotenes have such a chemical structure that on a unit weight basis it can yield equal amount of vitamin A. But when β -carotene is converted into

retinol in the body, the efficiency of conversion is less, i.e. 1 μg of carotene yielding only 0.5 μg of retinol. However, other carotenes yield even less amount of vitamin A. Further, while preformed vitamin A is completely absorbed, carotene present in vegetable foods is not completely absorbed. For practical purpose only about 50% of β -carotene in foods is considered to be absorbed. The rich source of β -carotene is green leafy vegetables, spinach, amaranth, coriander, drumstick leaves, curry leaves, mint, raddish leaves etc. Ripe yellow fruits such as mangoes, papaya and tomatoes are also rich in carotene. Among other vegetables, carrots and yellow pumpkin are good sources. It can be said that in general the greener the leafy vegetables, higher the content of carotene, and thus the outer green leaves of cabbage have more carotene than inner white leaves. Most of the Indian diets have β -carotene as the main source of vitamin A. The availability of β -carotene from these diets vary from 25–50%, depending on the fat content of the diet. Thus taking into consideration the physiological conversion of β -carotene to retinol and the absorption of β -carotene, one unit of β -carotene in foods is assumed to yield only 0.25 units of retinol. The requirement of β -carotene will be therefore 4 times the requirement of retinol.

Red palm oil (RPO) is also a very good source of β -carotene, besides being a source of edible oil. Red palm oil is consumed as such in some African countries. However, in refining process of crude red palm oil to obtain more refined fractions and palmolein, β -carotene is lost. Although oil palm source of red palm oil (RPO) is not grown in India, attempts are actively being made to cultivate oil palm to increase the supply of oil in the country. Red palm oil that may be extracted can be sold both as edible oil and as a source of β -carotene. One g of RPO contains 800 μg of β -carotene. If crude palm oil is acceptable as a cooking oil, it can be used as a rich source of β -carotene. The daily requirement of vitamin A for an adult is estimated to be in the neighbourhood of 750 μg (or about 2500 IU) of vitamin A. This amount of retinol or vitamin A can be derived from vegetable foods in the form of β -carotene. To derive the same amount of vitamin A i.e. 750 μg , β -carotene intake should be about 3000 μg taking into account the efficiency of conversion of β -carotene to retinol (which is only 50%) and its absorption

from vegetable sources (which is about 50%). The requirement of vitamin A is greater during pregnancy, lactation and during growth. Animal foods rich in vitamin A (retinol) are expensive and hence the most inexpensive and convenient way of ensuring adequate intake of vitamin A is to include green leafy vegetables (GLV) in the daily diet. About 50 g of the common leafy vegetables like amaranth will provide adequate β -carotene to meet the vitamin A requirement of an adult. Preschool children upto 6 years may have to take daily about 20 g of GLV. But in the case of infants and very young children, who cannot eat and digest leafy vegetables, can be given carotene rich fruits like papaya, mangoes (50-100 g) or animal foods like milk, liver, egg etc. Vitamin A can also be given in the form of a daily dose of cod or shark liver oil and medicinal concentrates derived from such oils or synthetic vitamin A.

The vitamin A content of any given foodstuff is variable and it depends upon a number of factors. The vitamin A content of milk or butter, for example, depends upon the carotene content of grass on which cow grazes. It is observed that in Europe "summer milk" obtained from cows fed on succulent green grass rich in carotene, contains more vitamin A than does "winter milk". The vitamin A content of butter may vary from 200-2000 μ g per 100 g. In the manufacture of ghee from butter by the methods used in the Indian homes, some 25% of vitamin A originally present may be destroyed. Prolonged heating of ghee in an open pan causes further destruction of the vitamins. Cow's ghee is richer in vitamin A than buffalo ghee. Buffalo ghee is practically devoid of β -carotene and contains only preformed vitamin A. The yellow colour of cow's ghee is due to presence of carotene which may constitute nearly a third of the total vitamin A activity. Genuine cow's ghee may contain about 20-25 IU of vitamin A per g while buffalo ghee contains 8-10 IU. The amount of vitamin A obtained through butter or ghee by a common man in India is negligible due to low level of intake of fat and much less of ghee.

Rich sources of vitamin A

The concentrated source of vitamin A in our country is shark liver oil and synthetic vitamin A. It is relevant at this stage to say a few words about shark liver oil industry in India. In the past the only source of vitamin A for treatment of deficiency

cases was the Norwegian cod liver oil and concentrates manufactured from halibut liver oil. During the II World War, the import of cod liver oil was completely stopped. The country was however fortunate to identify alternate sources in the liver oils of shark and saw fish that abound in the Indian coastal waters. This alternate source was found to be more potent in vitamin A than the imported cod liver oil. It is somewhat strange that shark and saw fish are found extensively in the coastal waters of the Arabian sea and the Indian Ocean and they are somewhat rare along the eastern coast. In most hospitals and boarding schools in India, fish liver oil preparations from shark and saw fish are being extensively supplied as a supplement. It should be mentioned in this connection that the supply of fish liver oil in welfare centres to infants and pregnant women and nursing mothers is only a part of total nutrition support. This fact must be explained and brought home to the beneficiaries to those who are in-charge of such welfare centres.

In addition to the natural sources of vitamin A, a synthetic product is also available. A manufacturing unit for the production of synthetic vitamin A from Indian lemon grass oil has also recently been established in the country. Synthetic vitamin A is produced by two companies in India with a total annual production of 100 million mega units. This synthetic vitamin A is used mostly by the pharmaceutical industry to manufacture vitamin A containing formulations for therapeutic use. These synthetic vitamin A preparations are also used in food industry for fortifying and supplementary foods. This synthetic vitamin A is also currently used for the manufacture of vitamin A concentrates (200,000 IU/mg.), for periodic administration to young children in the national Nutritional Blindness control programme. Although synthetic vitamin A is available for food fortification with vitamin A, this approach as a public health measure to contain vitamin A deficiency is not operative in India. Vitamin A used to be added to vanaspathi at a level of 50 IU/g. and it was mandatory. However this compulsory requirement is now withdrawn and manufacturers have an option to add vitamin A to vanaspathi. Fortification of commonly consumed food stuffs like sugar in Guatemala and condiments like MSG in Philippines has been in

operation to prevent Vitamin A deficiency in the population. In India such an approach is not considered since fortification of commonly used food article like salt is not technically feasible, due to instability of vitamin A in salt. However, vitamin A is used to fortify commercially manufactured foods like milk powder, cereal, weaning foods etc.

Vitamin A is somewhat less stable than carotene. Light, particularly ultra violet light and atmospheric oxygen readily destroy vitamin A. Ordinary cooking of vegetables causes negligible loss of β -carotene content. However, fresh green vegetables contain invariably more carotene than stale ones, and hence green vegetables should be consumed fresh.

Intake of large amount of vitamin A for prolonged periods can lead to toxic symptoms which include irritability, headache, nausea and characteristic forceful vomiting. The symptoms subside on stoppage of the intake.

Vitamin A deficiency which is common among children of the poor in the country is a public health problem leading to blindness. As an effective approach to prevent vitamin A deficiency among the children in rural areas, daily consumption of locally available inexpensive source of β -carotene is recommended. A proper and an effective education of the mother in the use of carotene rich foods is essential to fight vitamin A deficiency. Green leafy vegetables like agathi, drumstick, spinach, amaranth etc. and fruits like papaya, seasonal fruits like mangoes and tomatoes, yellow pumpkin, roots and tubers like sweet potato, carrots, yellow pumpkin are some of the alternatives that can be suggested. They can be consumed in amounts equivalent to 30-50g of GLV, 100 g of mango, 200 g of papaya etc. The advice given to the mothers should be practical and should emphasise the use of carotene rich foods locally available in different seasons and readily acceptable.

Vitamin D

Vitamin D is required for bone growth and calcium metabolism. Lack of vitamin D leads to rickets and osteomalacia. Vitamin D plays an important role in the absorption of dietary calcium from the intestine and its deposition in bone. Gross

deformities of bone may therefore result if enough vitamin D is not available to the body.

Vitamin D (cholecalciferol) does not act directly to discharge its functions in the body. Recent studies have shown that it is first converted into 25 hydroxy cholecalciferol in the liver and subsequently to 1,25-dihydroxy cholecalciferol (1,25 DHCC) in kidney. 1,25-DHCC is the active form of the vitamin which functions in the body. Apart from the lack of vitamin D, a deficiency in the conversion of the vitamin D to its active form can also cause rickets/osteomalacia. Vitamin D acts like a hormone in the body. Thus its active metabolic 1,25 DHCC induces Ca binding protein in the mucosa to facilitate Ca absorption and transport.

Vitamin D is also formed in the skin by the ultraviolet rays present in sunlight which convert a cholesterol derivative (β -dehydrocholesterol) present in the skin to vitamin D (cholecalciferol). Therefore rickets do not generally occur in children normally exposed to sunlight, but may develop among those who live in dark and dingy households. This deficiency occurs in temperate climates where exposure to sunlight is limited, unless vitamin D is obtained through food. Probably minor degree of rickets is more common in infants and young children throughout India than is generally believed. Malnourished children with protein deficiency may also develop rickets probably due to poor conversion of vitamin D (cholecalciferol) to the active form of the vitamin D. The most inexpensive way of getting vitamin D is exposure to sunlight which is freely available in plenty particularly in tropical countries.

Osteomalacia manifests itself initially as pain in bones, usually starts during pregnancy when the demand for Ca is raised to meet the increased need of the growing foetus in the womb. After the child birth the disease may regress but it may recur in a more severe form in the subsequent pregnancies. Ultimately the bone of the victim may become so bent that the woman is unable to stand upright and the distortion of the pelvis may cause child birth very difficult. A good supply of vitamin D during pregnancy benefits the mother and helps satisfactory development of the infant. The vitamin D requirement of child is placed between

200-400 IU. This requirement may be obtained in great measure in tropical countries through exposure to adequate sunlight. Since vitamin D cannot be easily obtained through diets by majority of Indians who can obtain it through exposure to sunlight, the recent Expert Group of ICMR has not recommended dietary intake of vitamin D for Indians. Only in those cases where vitamin D requirement is not met through adequate exposure to sunlight or due to metabolic or genetic reasons, therapeutic supplementation of vitamin D may be necessary. One gm of pure vitamin D is equivalent to 40 million IU, ie. (400 IU = 10 μ g) of the vitamin.

As in the case of vitamin A, intake of excessive amounts of vitamin D can also lead to toxic symptoms, which include irritability, nausea, vomiting and constipation. The margin of safety for vitamin D appears to be much smaller than for vitamin A. Cases of toxicity in children have been reported even with prolonged daily intakes of a dose as low as 1000 IU.

Other fat soluble vitamins

The other fat soluble vitamins are vitamin E and vitamin K which are widely distributed both in plant and animal kingdom. Vitamin E possess anti-oxidant property. It is believed to have a role in preventing the oxidation of β -carotene and vitamin A in the intestine and also in preventing lipid peroxidation of PUFA in cells and maintain integrity of cell membrane which are largely composed of unsaturated fats. Vitamin E is widely distributed in foods. It is present in high concentration in vegetable oils and in cereal grains. Human requirement of vitamin E is not known with certainty.

B-vitamins

There are several B-vitamins, but only those whose importance in human nutrition have been clearly established will be discussed here. The common property of B-vitamins is that they are essential for the metabolism and proper utilization of energy, carbohydrates, proteins and fats. An important vitamin of this group is thiamin, earlier called as vitamin B1.

Besides thiamine there are several other members of the B-group of vitamins which are referred to as B2 complex. They include riboflavin, nicotinic acid, pantothenic acid, pyridoxine, folic

acid, vitamin B12, biotin, choline and inositol. Recent studies have shown that several of these (the first seven) are of great importance in human nutrition since deficiency of one or more of these are often seen in humans and their catalytic role in metabolism of major nutrients is well established. Choline and inositol besides the other, appear to be important in animal, poultry and microbial nutrition. The deficiencies of B-vitamins often overlap and hence in clinical practice cases presenting one or more of these deficiency symptoms are treated with a mixture of B-complex vitamins than with individual vitamins, unless treatment with single vitamin in large dose is especially indicated.

Thiamine

Vitamin B1 or 'thiamine' as it most commonly referred to, is an important member of the B-group of vitamins and is the first of the vitamins to be discovered. It was also known formerly as the 'anti beri beri' or 'anti neuritic' vitamin. Prolonged deficiency of thiamine in the diet is one of the main factors leading to the disease beri beri which may manifest in one of the two forms. In the "dry beri beri", there is loss of appetite, tingling and numbness in the legs and hands and a dropping of the feet. In "wet beri beri" on the other hand, there is dropsy, palpitation and breathlessness and weakness of heart muscle leading to heart failure. Thiamine is concerned in the proper utilization of carbohydrates in the body and in the absence of adequate amounts of thiamine full utilization of sugars and starches for meeting the energy needs is adversely affected.

The richest source of thiamine is yeast and the outer layers of cereals like rice, wheat and millets. The commonly consumed foods which contain a high level of thiamine are unmilled cereals, pulses and nuts, particularly groundnut. Fruits, vegetables and animal foods like meat, fish, eggs and milk are poor sources of this vitamin. It would appear in general that foods which contain carbohydrates as a major source of energy contain a higher level of thiamine which is required for the metabolism of carbohydrates. In typical diets consumed in India cereals contribute a major portion of daily thiamine intake and hence the need for using whole cereals rather than highly polished cereals like rice. Removal of the outer bran layers of grain results in removal of

thiamine and therefore diets largely based on highly milled raw rice contain insufficient thiamine and can cause beri beri.

This disease used to be common in certain parts of India particularly in coastal districts of Andhra Pradesh since diets consumed in these areas used to consist mainly of highly polished rice. In recent years, however, the incidence of this disease has declined presumably due to use of less polished rice and diversification of diets consumed. Now a days the Government has restricted through legislative act the extent of polishing of rice during milling.

Thiamine requirement of an individual depends upon a number of factors among which the composition of diet is one. Since thiamine is essentially concerned in the utilisation of carbohydrates, the need for thiamine increases when the proportion of carbohydrates in the diet is high as in the case of Indian diets. Conversely the presence of fat in the diet reduces the need for the vitamin and hence fat is said to have thiamine sparing action.

Thiamine requirements are closely related to energy intake and hence its requirement is usually expressed in terms of energy intake and it is about 0.5 mg of the vitamins per 1000 kilo calories. Whenever thiamine requirements of certain groups like infants and children are not directly determined experimentally, they are computed on the basis of their calorie needs. Daily thiamine requirement ranges between 0.5 – 2.0 mg/day depending upon age, physiological status and level of daily physical activity. It is not difficult to plan a diet containing enough thiamine. Diets based on whole wheat, any of the millets, raw hand pounded rice or parboiled rice (hand pounded) usually supply adequate amounts of thiamine. The greatest danger of thiamine deficiency arises when highly milled (polished) raw rice is consumed as the main component of a diet with practically negligible amounts of other thiamine rich foods like pulses. Inclusion of pulses in the diet can improve the thiamine content of this diet. The greater the proportion of energy derived from cereals, the more important it becomes to avoid preponderance of milled raw rice in diets. An easy and an effective means of preventing thiamine deficiency is to have recourse either to parboiled

rice or undermilled raw rice or partial replacement of milled raw rice by wheat or any of the millets to the extent of about 100 g/day. This can also be achieved by including 60 – 70 g pulse in the diet based exclusively on raw milled rice.

Recent studies have shown that thiamine content of breast milk in poor mothers in rice eating areas is lower than that of well-to-do mothers. Supplementation of such mothers with thiamine was shown to increase the concentration of this vitamin in the milk. Thus deficiency of thiamine in the diet affect only the adults but may have repercussions also on the nutrition of the breast-fed infants.

Riboflavin

Riboflavin as a part of a coenzyme is essential for several oxidation processes inside the cell and is concerned with energy and protein metabolism. Some of the clinical symptoms attributed to inadequate intake of this vitamin in the diet are the soreness of tongue (glossitis), cracking at the angles of the mouth (angular stomatitis), redness of the eye and burning sensation in the eyes, scaliness of the skin in the region between the nose and angles of the lips (seborrheic dermatitis). Scrotal dermatitis can also be a result of riboflavin deficiency. Recent studies indicate that psychomotor development in children may be impaired in riboflavin deficiency. Among the several B-complex vitamins, riboflavin deficiency is the most widespread, particularly among children and women in our country. Recent studies indicate that common infections like respiratory infections can accentuate the deficiency of riboflavin.

Good sources of riboflavin are milk and milk products (including skim milk, butter milk, curds, cheese and whey), eggs, liver and green leafy vegetables. Wheat, millets and pulses are fair sources of riboflavin while rice particularly is a poor source. Riboflavin is the most limiting of all B vitamins in cereal based diets of the poor. It is rather difficult to ensure adequate supply of this vitamin in a predominantly vegetarian diet. Inclusion of milk, greens and pulses in a cereal diet will improve the dietary supply of this vitamin.

Dietary requirement of this vitamin has been established in recent years. Its requirement is also

related to energy intake, it being about 0.6 mg per 1000 kilo calories. The daily safe requirement of this vitamin ranges from 0.7 to 2.2 mg/day depending upon age, physiological status and level of activity. There is good evidence that poor Indian diets which contain little milk are generally deficient in riboflavin.

Nicotinic acid

Nicotinic acid (also called niacin) is a vitamin intimately connected with several metabolic reactions. It takes part as a component of coenzyme in oxidative reactions and is concerned with metabolism of carbohydrate, fats, and proteins. This vitamin can be formed in the body from the amino acid tryptophan, which is present in all dietary proteins. Part of the dietary tryptophan is converted into niacin. Sixty mg of this amino acid can give rise to 1 mg of nicotinic acid in the body. Hence body requirement of this vitamin is met partly from the vitamin present in foods and partly by conversion from tryptophan present in dietary proteins. Hence in the assessment of requirement of this vitamin, the contribution from both is to be considered. Similarly, in the assessment of content of diets, both are considered and total niacin content are expressed in terms of niacin equivalents (mg)

which is

$$(\text{niacin content} + \frac{1}{60} \text{ Tryptophan content})$$

Since this vitamin takes part in many reactions of energy metabolism, its requirement has also been related to energy requirement. The safe level of this vitamin has been estimated as 6.6 mg niacin equivalents per 1000 kcal. The daily requirement of this vitamin varies from 8-26 mg niacin equivalents for various physiological activity groups.

Lack of this vitamin in the diet leads to the disease pellagra, which is characterised by soreness of tongue, pigmented skin and diarrhoea. The dermatitis appears most often over areas of skin which is exposed to sun such as the back of hands and feet and symmetrically distributed. Although pellagra is essentially due to deficiency of nicotinic acid, in some countries of Southern part of America (USA) and Mexico where some population groups used to consume maize as the main cereal with no other supplement, pellagra was commonly seen because maize is a poor source

of both nicotinic acid and tryptophan. Further, a part of nicotinic acid present in maize is in a bound form and not physiologically available. In Southern Peninsula of India, pellagra has been observed in areas where jowar (*sorghum vulgare*) is the main cereal consumed. Pellagra in these areas is seen among the poor who eat mostly sorghum based diet without much protective foods. Pellagra among jowar eaters is attributed to the presence of excessive amounts of the amino acid leucine in the protein of jowar and to the resultant imbalance between leucine and the other related amino acids, particularly isoleucine. Such an imbalance has been shown to interfere with the conversion of tryptophan to nicotinic acid in the body thus causing a deficiency of nicotinic acid.

Whole cereals, pulses, nuts and meat are good sources of nicotinic acid. Groundnut is particularly rich in nicotinic acid. Although poor in nicotinic acid milk is also effective in preventing pellagra because it is rich in tryptophan.

Pyridoxine

This vitamin also known earlier as vitamin B6 exists in three forms — pyridoxal, pyridoxamine and pyridoxine. These are interchangeable in the body.

Some of the important functions of vitamin B6 in the body are the metabolism of proteins and fats. Pyridoxal phosphate, the coenzyme form of this vitamin is required for the metabolism of amino acids and conversion of tryptophan to nicotinic acid. It is also associated with the metabolism of essential fatty acids. Although the need for the vitamins in humans is clearly established, clinical symptoms of B6 deficiency have not been clearly defined. Some types of angular stomatitis (cracking at the corners of the lips) and certain type of anaemia have been shown to be cured by the administration of pyridoxine. Inadequate intake of the vitamin by infants has been reported to cause convulsions.

Although vitamin B6 requirement of Indians have not been established, it would appear that a daily intake of 0.6 to 2.5 mg B6 would meet the requirement of different age groups. The B6 content of Indian foods have not been systematically studied. However, available information indicates that meat, liver, vegetables

and whole cereal grains are good sources of vitamin B6.

Folic acid

This is one of the two vitamins associated with certain type of anaemia (megaloblastic anaemia). Folic acid is required for the multiplication and maturation of red cells. Its deficiency results in megaloblastic anaemia which is often seen in children and pregnant women. The actual requirement of folic acid ranges between 50 – 100 μg depending on the age. However, in pregnancy, the requirement of this vitamin is increased to 150 – 300 μg . Some data are available on the folic acid content of Indian foods. Folic acid is present both in animal and plant foods. Fresh green vegetables, liver, pulses are the good sources of this vitamin.

Vitamin B12

Like folic acid, vitamin B12 is also involved in the maturation of cells and deficiency of this vitamin will also result in megaloblastic anaemia. This vitamin is also required for proper functioning of the central nervous system and also required for metabolism of folic acid. This vitamin is required for DNA synthesis and methyl group transfer.

The human requirement of this vitamin is placed at about 1 $\mu\text{g}/\text{day}$. Vitamin B12 is synthesised by bacteria and is present only in animal foods. Although a majority of Indians live on a diet predominantly based on foods of vegetable origin, B12 deficiency per se is not widespread. The manner in which the people get their vitamin B12 is not clear. There are various explanations offered, one is the bacterial contamination due to poor hygienic practice which is believed to provide small quantities of B12.

Vitamin C

Ascorbic acid, that is vitamin C, is an essential nutrient for man as he lacks the capacity to synthesise it like many other animal species. Ascorbic acid is a strong reducing agent. It is involved in collagen synthesis, bone and teeth calcification and many many other reactions in the body as a reducing agent. Vitamin C deficiency causes scurvy characterised by weakness, bleeding gums and defective bone growth. It also helps absorption of dietary iron by keeping it in the

reduced form, that is, in ferrous form. In recent years, extreme forms of vitamin C deficiency are rarely seen. Scurvy however is not commonly encountered in India although other vitamin deficiencies are seen quite extensively. Ascorbic acid occurs widely in plant foods, particularly in fresh fruits and vegetables, especially in green varieties. Of all the vitamins ascorbic acid is the most susceptible one to destruction by atmospheric oxidation. One of the characteristic properties of this vitamin is its intense reducing action and hence is oxidised rapidly in air. It is for this reason that when vegetables become dry and stale, or cut and exposed to air most of the vitamin C originally present is destroyed. Whenever possible fresh raw vegetables should be used for obtaining enough vitamin C. Fresh meat and milk contain only small quantities of this vitamin. Dry grains contain no vitamin C. However, when dry pulses and beans are allowed to germinate vitamin C is formed in the grain and the growing sprout, about 85% being present in the former and 15% in the later part. Sprouting involves soaking of grains in water for 24 hr, draining them and spreading them on a damp earth or damp blanket. Covering them with a moist cloth, in 2 – 3 days, the grains sprout with 1 – 2 cm of sprout. The germinated grains should be consumed as raw or after cooking for only a short period. During famine situations, viz. prolonged drought where fresh vegetables or fruits cannot be obtained, sprouted grains can be used as a cheap and easily available source of vitamin C. A commonly used source is sprouted bengal gram (*Cicer arietinum*); its efficiency in preventing scurvy has been demonstrated more than once during famines in India.

Sprouted bengal gram is by no means the best source of vitamin C among sprouted grams. Sprouted green gram (*Phaseolus radiatus*) contain about 3 times more vitamin C than does sprouted bengal gram. Expensive fruits like apple are not the rich source of vitamin C. Fresh fruits like orange, grapes, lime etc. contain good amount of vitamin C. But very cheap fruits like amla and guava are very rich sources of vitamin C. Indeed amla is one of the richest natural sources of the vitamin. Amla grows abundantly in all Indian forests and is obtainable in unlimited quantities during winter months. The fresh amla juice

contains 20 times as much vitamin C as orange juice. A single amla fruit is equivalent to one or two oranges in vitamin C content.

Heating or drying of fresh fruits or vegetables usually leads to destruction of most or all of the vitamin C originally present. Amla is however an exception among fruits not only because of its high vitamin C content, but it also contains substances which partially protect the vitamin from destruction on heating or drying. Amla juice which is highly acidic protects vitamin C. Use of dried amla is an ancient practice and has much nutritional relevance.

MINERALS AND TRACE METALS

A large number of minerals and trace metals are present in the body. Some of these form part of body structural component and some others act as catalytic agents in many body reactions. Bones and skeleton are made up mainly of calcium, magnesium and phosphorus, and iron is a component of blood. Minerals like zinc, molybdenum, copper, manganese and magnesium are either structural part or activate a large number of enzyme systems. Iodine is a part of hormone, thyroxine. Sodium, potassium are important elements present in fluids within and outside the cells and along with ions like chloride, bicarbonate and carbonate keep water and acid base balance. On an average man excretes daily 20-30 g of mineral salts consisting of Na, K, Mg, Ca, chloride, sulphate and phosphates and this must be made good by an adequate intake of these mineral salts through our food. In the case of growing infants and children intake of additional amounts of several minerals are essential to ensure adequate growth of tissues.

Calcium

Calcium is an essential element required for several life processes. As the structural component, calcium is required for the formation and maintenance of skeleton and teeth. It is also required for a number of other essential processes. It is required for normal contraction of muscle to make limbs move, contraction of heart for its normal function, nervous activity and blood clotting. These later functions are carried out by ionised calcium present in the cells. The Ca levels in cells and plasma are well maintained. Ca present in

bones help to maintain the Ca level in plasma in the face of dietary Ca deficiency.

Calcium is present in both animal and plant foods. The richest source of Ca among animal foods is milk (butter milk, skim milk and cheese) and among the vegetable sources is green leafy vegetables. Among the leafy vegetables, amaranth, fenugreek, and drumstick leaves are particularly rich in calcium and among root vegetables tapioca is a good source. Most cereals and millets contain some amount of this element and the millet ragi is a particularly rich source of calcium. Some of the pseudocereals like grain amaranth (Rajkeera) is also an equally good source. Rice is a poor source of calcium and therefore insufficiency of calcium is one of the main defects of diets largely based on rice. Children need relatively more calcium than adults to meet the requirements of growing bones. Calcium requirements are also increased during pregnancy to meet the needs of growing foetus and during lactation to compensate for Ca secreted in breast milk. A healthy breast fed baby of 3 months receives a large amount of Ca all of which has been drawn from mother's milk. If the mother's diet during this period is deficient in Ca, the Ca present in mother's bones will be depleted and her bones become prone to fractures. Mother's health and probably that of infant will suffer due to poor Ca nutritional status of the mother. Since there is considerable drain of Ca during pregnancy and lactation, particularly in the latter state, adequate supply of the mineral is essential during these conditions. A generous intake of milk and green leafy vegetables is therefore recommended during these periods.

Since there are no specific signs and symptoms attributable to Ca deficiency, the Ca requirement of man is not known with certainty. Moreover, man appears to adapt himself to low intakes of Ca without any apparent deleterious effects. The currently recommended allowances for Ca should be considered only as tentative.

Based on the available information on retention of Ca by the human body in long term balance studies, the suggested level of intake for an adult man and growing children is between 0.4 and 0.6 g/d. In the case of pregnant and lactating mothers, the Nutrition Expert Group of the Indian Council of Medical Research has suggested a daily

allowance of 1.0g. In recommending these dietary allowance of Ca, the fact that part of Ca in cereal based diets is unavailable due to the presence of phytate and oxalic acid, has been taken into account.

Certain foods like leafy vegetables (viz. amaranth) are rich in oxalates which bind Ca to form insoluble calcium oxalate and thus render Ca unavailable to the body. Similarly, phytates present in whole cereals bind calcium. Other foods which contain oxalates are horse gram, gingelly seeds, tea and coffee, but in the case of latter beverages only small amounts of oxalates pass into infusion.

The habit of chewing betel leaves with slaked lime (calcium hydroxide), a practice quite common in India (particularly among the poor) can increase Ca intake. Calcium ingested in this way can be utilised by the body. The habit of chewing betel leaves with slaked lime several times a day by expectant and nursing mothers in India has indeed a scientific basis. Since many cereal based diets are not likely to provide enough Ca unless plenty of milk is consumed, it may be useful to supplement the diet with Ca during pregnancy and lactation.

Phosphorus

Another major element in the body, next in importance to calcium is phosphorus. Utilization of calcium is closely linked with that of phosphorus, since most of the calcium in the body is deposited as calcium phosphate in the bone and the teeth. Phosphorus is also a component of nucleic acids and as phosphate esters plays an important part in the cellular metabolism of other nutrients like carbohydrate, fat, etc.

The rich sources of phosphorus in our diets are cereals, pulses, nuts and oilseeds. However, much of the phosphorus (40-80%) in these foods, particularly in cereals is present as component of phytin which is not available to the body.

It is usually considered that about a gram of phosphorus should be supplied in the diet. This amount of phosphorus is easily obtained even from a poor vegetarian (cereal based) diet and phosphorus deficiency is rarely seen.

Iron

Iron is an essential element for the formation of haemoglobin of red cells of blood and plays an important role in the transport of oxygen. Tissues also require iron for various oxidation reduction reactions. Most of the iron in the body is reutilised and some of the body iron is also stored in liver and spleen. The amount of iron to be absorbed from the daily diet is quite small. It is in the neighbourhood of 1-3 mg depending upon the sex and the physiological status. Since there is limited capacity to absorb dietary iron, diet should contain 10-25 fold iron required daily. Diets differ very widely in the bioavailability of their iron. Diets predominantly based on cereals permit only a low level of absorption in the range of 2-5%, while diet containing low levels of cereals and high levels of meat and fish permit 10-20% absorption. The types of diet consumed normally in India should contain 20-30 mg iron to meet the iron requirement of an adult. In considering iron requirements, availability of iron from the composite diet is more important than from the individual foods because of profound interaction between foods in influencing iron absorption.

Rich sources of iron are cereals, millets, pulses, green leafy vegetables. Of the cereal grains and millets, bajra and ragi are very good source of iron. Since these grains are contaminated with dust etc. the true contents of these grain are often lower than the values obtained by analysis of the market samples. Contaminant iron which is often not available at all may constitute 20-30% of the total iron present in foods as purchased. Milk, a good source of several nutrients, is a poor source of iron.

Inclusion in our daily diet about 50 g of green leafy vegetables which are rich sources of iron can meet a fair proportion of iron needs besides providing Ca, beta-carotene and vitamin C.

Although diet rich in iron may be able to meet our daily iron requirement and prevent iron deficiency, they may not be effective in correcting iron deficiency anaemia as indicated by lowered level of haemoglobin in the blood. Medicinal iron in the form of iron salts and other haematinics have to be provided to correct anaemia. Pregnant woman because of her high iron requirement often suffer from anaemia even on a diet containing normal levels of iron. In such cases

supplementation with iron salts may be essential atleast during later half of pregnancy.

In view of widespread prevalence of iron deficiency anaemia in many parts of the world, fortification of foods with iron is advocated to prevent iron deficiency. In our country fortification of common salt with iron has been successfully developed and demonstrated to be effective in preventing iron deficiency in the population if regularly used in place of ordinary salt.

Other elements

Apart from the above elements body contains a large number of elements all of which are essential for some function or the other. Major elements like Na, K, Mg are essential as electrolytes to maintain electrolyte balance. A wide range of trace elements are known to be required for cellular function, essentiality of only some of them like Zn, Cr, Cu, Mn, Se have been established in humans. Many of these elements are present in adequate amount in normal diet so that we do not encounter their deficiencies in the population.

Electrolytes

Sodium and Potassium: are important constituents of fluids present outside and within the cell. Proper concentration of these electrolytes inside and outside the cell is essential to maintain osmotic balance and keep cells in proper shape. Sodium and potassium are present in all foods particularly so in fruits and vegetables. In plant foods potassium is present in higher concentrations than sodium by a factor of 10 to 50 fold. Plant foods are indeed the rich source of potassium. The exact requirement of K is not known, but potassium present in a vegetarian food is probably adequate to meet the daily requirement.

Sodium is lost in urine and particularly in sweat as sodium chloride. Sodium present in foods is not adequate to meet the requirement. Hence sodium chloride, ie. salt has to be included in the diet. Besides imparting taste to food, salt provides necessary amount of Na required by the body. The exact amount of sodium required in a tropical country like India is not known with certainty. The daily intake of salt in our country may be as high as 20 g, the average being around

15 g per adult. In view of the association of hypertension with high salt intake, a lower intake of 8-10 g/day may be advisable, under conditions of excessive sweating as in summer and for those who work in hot environment a still higher intake may be necessary.

Magnesium

Magnesium is present in small concentration in all cells and is required for cellular metabolism. It is also present in bone along with calcium. Magnesium share many of the properties of calcium so far as absorption and metabolism and tissue distribution are concerned. Magnesium is also implicated to have a role in cardiovascular disease.

Dietary intake of magnesium to maintain balance is around 350 mg/day. Cereals, pulses and nuts contain 40-200 mg magnesium per 100 g. Magnesium content of foods is generally much higher than Ca. Green leafy vegetables are also good source of magnesium. Diets based on cereals, pulses and vegetables can provide adequate magnesium to meet the requirement.

Trace elements: It is known now that a large number of elements are required in trace amounts for a wide range of functions in the body. Their importance has been realised in recent years when sensitive tools for the determination of trace amounts of these elements became available. Atomic absorption spectrophotometry has become a standard method for trace element analysis. After the advent of this sensitive method, it has been possible to have data on the trace element content of foods. Some of the important trace elements of relevance in human nutrition are zinc, copper, selenium, cobalt, fluoride, manganese, chromium, iodine and molybdenum. Other trace elements are arsenic, nickel, vanadium and silicon. Essentiality of some of the trace elements for humans are well established, viz. iodine, Zn, Cu, F, Mn, Cr.

Iodine

Iodine deficiency diseases including goitre are widespread in many parts of the world and it forms a major public health problem in our country. Over 120-150 million people in the world are estimated to suffer from iodine deficiency. Iodine deficiency is characterised by swelling of

thyroid gland in the neck. Iodine deficiency during fetal stage may lead to mental retardation and in later life retardation of body growth. The daily requirement of iodine is reported to be 100–150 μg . In a non-endemic area 60–75% of the iodine needs are met by the iodine present in the diet and the rest through iodine content of water. In an endemic goitre area, there is iodine deficiency in the soil, water and locally grown foods. Besides, certain compounds present in foods, particularly vegetables of brassica species interfere with iodine utilization and lead to goitre. They are known as goitrogens.

Till recently, there were no reliable figures for iodine content of Indian foods, to enable assessment of dietary intake of iodine. This was mainly due to difficulties with establishing a reliable micromethod for the estimation of trace amount of iodine in foods. Recently an improved micro method for estimation of iodine in foods has been standardized at National Institute of Nutrition and used for analysing commonly consumed foods for their iodine content both from the endemic and non-endemic areas. It would appear that atleast in the non-goitre area, diet provides daily nearly 200 μg iodine which should meet the entire day's requirement.

One of the well tested approaches to control iodine deficiency disease in the population is the distribution of iodised salt to affected population. On the basis of daily salt consumption, iodised salt containing atleast 15 μg of iodine per g could easily meet the daily iodine requirement. In India goitre is endemic in sub-Himalayan regions affecting nearly 120 million population. In recent years, several pockets of goitre have been identified in other parts of the country which were traditionally considered as the non-endemic area. These pockets are mostly in the tribal areas.

A programme of distribution of iodised salt in the endemic area is in operation in India. For salt iodisation, potassium iodate, a more stable compound is used. Notwithstanding this in actual practice there is considerable loss of iodine during transportation and storage under prevailing conditions. Hence a higher level of initial iodisation upto 30 ppm has been recommended to take care of these losses. A new process also has

been developed to improve the stability of iodine in iodised salt.

Zinc

Zinc is an important element performing a range of functions in the body as it is a cofactor for a number of enzymes. Zinc deficiency leads to growth failure and poor development of gonadal function. Dwarfism and hypogonadism seen in Egypt and Iran are attributed to dietary zinc deficiency. Although zinc intake and zinc absorption is low on diets of poor income population in India suggesting a possible dietary zinc deficiency no clinical abnormality attributable to zinc deficiency is seen in our country. However, sub-clinical deficiency of zinc does exist in our population, but the functional significance of this is not as yet clear.

Copper

Copper is an essential element for man. It plays an important role in iron absorption. It is also involved in cross linking of connective tissues, neurotransmission and lipid metabolism. Part of body copper circulates in plasma as ceruloplasmin. Copper is also present in oxidative enzymes like cytochromes. Copper metabolism in the body is under homeostatic regulation, in case of inadequate intake, excretion is reduced. The estimated dietary intake of copper from a typical Indian diet is around 2 mg/day. A daily intake of 2-3mg through diet may satisfy these requirements. Absorption of copper from poor diet is lower than from well balanced diets, absorption varying from 5 to 33%. Copper content of Indian diets of poor income groups is just marginal and some level of dietary deficiency of copper may exist. However no clinical abnormality attributable to copper deficiency is recognised. Clinical symptoms due to copper deficiency either nutritional or genetic lead to pathological symptoms in organs rich in connective tissue. Central nervous system disorders may also result from copper deficiency with impaired myelination and catecholamine metabolism.

Chromium:

Chromium is essential for animals and probably for man. Chromium deficiency has been shown to lead to impaired glucose tolerance. The factor responsible for this property has not yet been isolated. Because of its role as glucose

tolerance factor chromium has been much studied in relation to diabetes. However, clearcut disease or abnormality attributable to chromium deficiency has not been identified so far. Because of its low content in foods, chromium content of foods was not determined till recently for want of reliable method. Use of atomic absorption spectrometer with graphite furnace has helped in estimating chromium content of foods rather accurately. Chromium content of a number of foods consumed in India has been established. Chromium content of cereal based Indian diets ranges between 70–150 µg/day; low income group diets have generally a lower (25%) content. Although absorption of inorganic chromium is quite low, i.e. 1–2%, chromium present in our diets is absorbed to an extent of 70–80% or more. This is presumably due to the fact that chromium in foods is present in organically bound form which facilitates greatly its absorption. Chromium requirement has been estimated to be around 70 µg/day and most of our diets consumed by rich or poor are able to provide this amount of chromium. Dietary chromium deficiency is not likely to occur in our population.

Manganese:

Manganese is established as an essential element as it participates in a number of reactions as a component of metalo enzyme or as enzyme cofactor. Its function in glycosyltransferase is well recognised and its deficiency leads to abnormality in skeletal bone mineralisation. It also participates in lipid and carbohydrate metabolism. A large number of foods consumed in India have been analysed for manganese. Manganese content of diets consumed in India varies from 4–10 mg/day. Absorption of manganese from these diets vary from 5–20%. Surprisingly, diets of poor income groups have a better absorption of manganese than diets of high income groups. The basis for these differences in absorption is not known. The estimated manganese requirement on these diets based on human balance studies is 5 mg/day. Most of our diets can provide this amount. Hence manganese deficiency is not likely to occur in our population. Excess of manganese is toxic, a situation that may be encountered in manganese mines and other industries.

Molybdenum:

Molybdenum is an essential constituent of xanthine and aldehyde oxidases and is involved in uric acid metabolism. Since molybdenum deficiency in humans is unknown current dietary intakes must be adequate. The daily requirement for an adult may range from 0.15 to 0.5 mg. Molybdenum content of several Indian foods have been estimated. Dietary deficiency of Mo is unlikely in our population. However, excess Mo intake may increase the risk of gout. High Mo and low copper intakes has been implicated in the etiology of endemic genuvalgum and bone disorders which occurs in certain endemic fluorosis areas.

Fluoride:

Fluoride is also an important element in human health. It is an essential element, a minimum amount being required for prevention of dental caries. However, its presence in high concentration in the environment, particularly in water ($> 2-3$ ppm) leads to fluorosis resulting in hardening of bone. Fluorosis occurs as an endemic disease in India in parts of Andhra Pradesh (Nalgonda district) and Punjab (Patiala district). In the endemic area of Andhra Pradesh, another clinical manifestation of fluoride toxicity called 'Genu valgum' has been identified in recent years. In the development of genu valgum apart from fluoride toxicity, other environmental factors appear to have contributed to its emergence, viz. high levels of Mo and low levels of Cu. One important strategy to control fluorosis in these areas is to supply low fluoride water. Different approaches to achieve this have been suggested.

While high intake of fluoride is a health hazard a minimum level of fluoride in water (< 1 ppm) is essential to protect against dental caries. Dental caries may be caused by excess intake of sticky sweets among children. This situation is more prevalent in the West than in our country. However, the practice of brushing the teeth and washing the mouth after food should be inculcated among children to reduce the risk of caries. Because of health implication of F, there has been some interest to obtain reliable data on F content of foods. It is estimated that by food alone 0.3–0.8 mg F may be supplied. Daily intake of F upto 2 mg through foods has been reported from some areas.

Fifty to 80% of food fluoride is absorbable. It is suggested that in assessing the benefits and risks of fluoride ingestion, that apart from water, F derived from foods also needs to be considered.

Other trace metals

Other trace metals of significance in human nutrition are selenium, cobalt, silicon, arsenic, nickel and vanadium. Selenium is an essential element and along with vitamin E, it is required for maintaining liver integrity. Selenium deficiency leads to liver necrosis. An endemic disease of

cardiomyopathy in children (Keshan syndrome) is attributed to low Se in the environment. Selenium deficiency is also implicated as a risk factor in cancer. Cobalt is important trace element as it forms part of the vitamin B12. It is also reported that cobalt is required for optimum utilisation of low doses of iodine. The possible role of low Co in iodine deficiency disorders (Goitre) is however not known. The nutritional significance of the other trace elements like Si, As, Ni and V in man is uncertain although their essentiality for animals have been established.

2. NON-NUTRIENT COMPONENTS OF FOODS AND THEIR SIGNIFICANCE

The common foods we eat are the main source of most of the nutrients discussed in the previous sections. These foods also contain a wide range of organic chemical compounds, but having no nutritional function. Some of these compounds however, act as anti-nutritional factors interfering with the utilisation of some of the nutrients present in these foods. Some of the compounds like lathyrogens may be toxic and others like fibre, beneficial. These compounds can be collectively called non-nutrient components. These natural substances occur widely more in plant foods than in animal foods and determine the overall quality of the food. Many of these compounds are designed by nature to protect plants against external predators. Some of these compounds present in small amounts, particularly in spices, act as flavour, aroma and some of them have certain pharmacological properties. These anti-nutritional factors, toxins and dietary fibre are important for assessing the overall quality of a food. The physiological role of these anti-nutritional components must also be considered besides their nutrient content while considering the health impact of diets based on natural foods.

Anti-nutritional factors

Many foods particularly those of plant origin contain a wide range of anti-nutritional factors which interfere with the assimilation of nutrients contained in them. The important anti-nutritional factors are trypsin inhibitors, phytates, oxalates, tannins, lectins and goitrogens. They interfere with the utilisation of other nutrients like protein, minerals like iron, zinc, calcium and iodine.

Trypsin inhibitors

Trypsin inhibitors are proteins distributed widely in plant foods like legumes and certain animal foods like white of egg. They generally inhibit the activity of trypsin in the gut and interfere with digestibility of dietary proteins and reduce their utilisation. They are heat labile; the extent and ease of heat inactivation varies from one trypsin inhibitor to another. Some are more resistant than the others. However, autoclaving at 120°C for 15–30 minutes inactivates almost all trypsin inhibitors. Although the presence of

trypsin inhibitor has been demonstrated in many legumes and egg white, those present in soyabean, lima and kidney bean, duck egg white are important from a nutritional point of view. Trypsin inhibitors from other dhals and hen egg white are easily inactivated and do not pose any problem. More drastic heat treatment is necessary to inactivate trypsin inhibitors of soya, lima and kidney bean and duck egg white. This heat treatment inactivates the trypsin inhibitors and improves considerably the utilisation of protein present in these foods. Foods also contain other protease inhibitors which do not pose any nutritional hazard.

Phytate

Phytate is hexa phosphate of inositol. It is widely distributed in seeds. Unrefined cereals and millets are richest source of phytates. Phytates act as a source of bound phosphorus for the seeds during germination. These phytates bind iron, zinc, calcium and magnesium. In presence of Ca & Mg it forms insoluble complexes with iron and thus makes iron unavailable. Phytates present in cereals contribute significantly to poor absorption of iron from cereal based diets. Unrefined cereals contain more phytates than refined or polished cereals (rice). Widespread occurrence of zinc deficiency in Iran and Egypt is attributed to consumption of whole wheat flour with high phytate content by the local population. On germination of the grains, the phytate content reduces due to enzymatic break down of phytate. Improved iron availability in germinated grains can be partly attributed to a reduction in phytate content.

Tannins

Tannins are condensed polyphenolic compounds which are widely distributed in plant kingdom. They are present in high amount in seed coat of most legumes, spices, tamarind, turmeric, in certain vegetables and fruits. Millets like bajra, ragi, sorghum also contain a fair amount of tannin. Tannins bind with iron irreversibly and interfere with iron absorption. Studies have shown that tannin derived from different sources in Indian diets are potent inhibiting agents of iron

absorption. A typical Indian diet based on cereals, legumes, vegetables and spices may contain as much as 2-3 g of tannin. Removal of seed coat of legumes, exclusion of tamarind, turmeric etc., from a diet can reduce tannin content of the diet and improve iron absorption. Tannins are also known to bind proteins and reduce their availability.

Oxalates

Oxalic acid, a dicarboxylic acid or its salts (oxalates) are widely distributed in plant foods. These oxalates are mostly calcium salts. Rich source of oxalates are green leafy vegetables and green vegetables and some legumes. Horsegram and khesari dhal among grains have a high content of oxalates. Oxalates are known to interfere with calcium absorption by forming insoluble salts with calcium. Dietary oxalates can be absorbed and contribute to increased excretion of oxalates in urine. High oxalate excretion may predispose to oxalate crystals leading to urinary stones. Stone patients are advised to avoid high oxalate containing foods. However, diets containing foods rich in insoluble calcium oxalate are not likely to be harmful.

Goitrogens/anti-thyroid substances

Although goitre develops due to low iodine intake, it has been recognised for a long time that certain substances present in plant foods interfere with iodine uptake by thyroid gland and may contribute to development of iodine deficiency disorders when iodine intakes are marginal. Such compounds are termed 'goitrogens'. Thiocyanate, isothiocyanates and their derivatives like chevincine (glycoside of 3-methyl-sulphonyl propyl isothiocyanate, gluconolactone), etc. These compounds occur in leaves and vegetables belonging to the *Brassica* genus and family Cruciferae, like cabbage, cauliflower, rape leaves, radish, rapeseed-mustard, (water cress broccoli) brussel sprouts, turnips, etc. Soya bean and other legumes, bajra, peanut, lentils, common bean also contain goitrogens. All these foods are known to contain one or the other goitrogenic substance and demonstrated to block uptake of iodine by the thyroid gland. Excessive intake of these foods in the face of marginal intake of iodine from foods and water may lead to precipitation of goitre.

Other toxic agents in foods

Some of the foods contain naturally occurring toxic compounds which man has identified by experience and tried to avoid. When it is inevitably consumed, it results in ill health. In several cases man has tried to develop method to process the food to remove the toxic compounds and consume the detoxified food. Well known example of foods containing toxic substances leading to a disease in man are: *Lathyrus Sativus* (khesari dhal), *vicia faba* and cassava. The *lathyrus* seeds contain toxic amino acid (BOAA) which is considered to be responsible for the disease Lathyrism. The disease favism accompanied by haemolysis is caused by the consumption of *vicia faba* (broad beans). Some of these foods can be rendered safe by appropriate treatment. The toxic amino acid from *L. Sativus* can be removed by steeping the seeds in water and discarding the steep water, or using a process similar to parboiling of paddy. However, the process of rendering *L. Sativus* safe has not been widely used as yet. Similarly cyanogenic glycosides can be removed from cassava by leaching out with water. In fact cassava is consumed after treatment this way.

Other xenobiotics

Foods contain a large number of other compounds, some of which impart flavour/taste to foods while others have pharmacological activity. These compounds can be classified as compounds foreign to our body (xenobiotics). Normally when ingested in small amounts body can metabolise and dispose off these compounds. Some of these xenobiotics naturally present in foods are considered to play a positive role in the sense, that they can induce in the body enzymes to metabolise them. The same enzyme system will be useful for the body to dispose off other dangerous xenobiotics which are potential carcinogens present in foods due to environmental contamination.

Dietary fibre

Dietary fibre is the name given collectively to undigestible carbohydrates present in foods. These carbohydrates are not chemically well defined, but together with lignin consist of cellulose, hemicellulose and pectin and plant gums and mucilages. Some of these are water soluble and others water insoluble. Earlier only the fibre which

is insoluble in boiling, dilute alkali and dilute acid was being reported as crude fibre. These may include highly insoluble structural fibre, cellulose, lignin and hemicellulose. The earlier 'crude fibre' and the dietary fibre are quite different. Crude fibre refers to a component defined by an analytical procedure. The dietary fibre is not digested by the enzymes of the stomach and small intestine where most of the other carbohydrate like starch, sugars are digested and absorbed. The dietary fibre have the property of holding water and swell and behave like a sponge as it passes through GI tract. Fibre adds bulk to the diet and increases transit time in the gut. Some of the fibre may undergo fermentation in the colon. In recent years it is considered desirable to have some amount of dietary fibre in the diet. Various reported beneficial effects attributable to dietary fibre are based on experimental evidence and epidemiological data. Dietary fibre is known to be associated with reduced incidence of coronary heart diseases. Various dietary fibre components may differ in exhibiting this property. The mechanism of its action is attributed to its binding to bile salts and preventing its reabsorption and in reducing cholesterol level in circulation. These fibre particularly the gums, pectins when ingested

with a diet are reported to reduce post-prandial glucose levels in blood. These types of dietary fibre are often recommended for the management of certain types of diabetes. Recent studies have shown that gum present in fenugreek seeds (it contains 40% gum) is most effective in reducing blood glucose and cholesterol levels as compared to other gums.

Since dietary fibre increases transit time and reduces the time of release of ingested food in colon, low fibre diet is associated with colon cancer and dietary fibre may play a role in reducing the risk of colon cancer. Fibre may also have some adverse effects on nutrition by binding some trace metals and preventing their proper absorption. This may become important constraint on high dietary fibre containing marginal levels of trace metals.

The procedure adopted for dietary fibre estimation is cumbersome and complicated and the values may depend upon the method used. All values for dietary fibre may be considered as approximate. This is because dietary fibre is not a single entity which can be chemically defined. It is suggested that an intake of 40g dietary fibre a day is desirable.

3. FOODS AND THEIR NUTRIENT CONTENT

So far we have discussed various nutrients required by man for a healthy living. Man derives these nutrients through the food he eats in his daily diet. The type and quantity of various foods he includes in his diet is based on sociocultural and economic considerations. It may vary from country to country and within a large country like India, it may vary from one region to another. However, in India the habitual diet pattern is similar although the type and amount of foods included in the diet may depend upon the region and socioeconomic level of the individual. Each food in our diets, although contains a wider range of nutrients, serves as a major source of one or two major nutrients. The major foodstuffs that go to make typical Indian diets, their nutritional contributions are discussed.

Cereals and millets

The major cereals and millets consumed in India are rice, wheat (cereals), jowar, bajra, ragi (millets). In recent years the production and consumption of maize has also increased. These grains are the main source of energy in Indian diets contributing as they do 70-80% of daily energy intake of majority of Indians. Since cereals/millets are the cheapest, widely available source of energy, their contribution to energy intake is the highest among the poor income families and it decreases with increasing income. Even with the highest income groups, cereals account for at least 50-60% of the energy intake. In view of the large intake, cereals are also an important source of several other nutrients in Indian diets: protein, calcium iron and B-complex vitamins. Cereals contain 6-12% protein which is generally deficient in lysine and provides more than 50% of daily protein intake. Among cereals rice protein is of better quality than the others. However, cereals when eaten with pulses, as is the common practice in India, the protein quality improves due to mutual supplementation between cereal and pulse proteins, the former being deficient while the latter being rich in lysine.

Cereals are also source of some nutrients like Ca & Fe. Although they are not rich in these minerals, they contribute significantly due to fairly large amounts of cereals consumed daily. However

rice among the cereals is poorer in these two minerals, the content depending upon the extent of polishing. Hence diets based predominantly on rice have lower Ca & Fe content. Ragi is rich in minerals, especially calcium. Millets including ragi are rich in minerals and fibre. Inclusion of some amount of millets in a diet will help in making up deficiency of some of these minerals in the diet and in providing bulk (fibre) to diet, especially the rice based ones. It must be pointed out that these millets are also rich in phytate and tannin and hence interfere with mineral availability. A balance has to be struck between the positive and negative aspects of nutritional quality of millets.

Cereals, particularly the whole grains are an important source of B-vitamins in our diet. Since most of these vitamins reside in outer bran or polishing refining these grains (removal of bran) or polishing rice reduces B-vitamin content to different degrees depending upon the extent of refining and polishing. Highly polished rice has therefore very low level of B-vitamins. Parboiling which includes soaking in water and steaming of paddy results in seeping of vitamins present in outer layer into the grain. Hence milled and polished parboiled rice retains much of the vitamins. Same considerations apply to high extraction wheat flour (viz. maida) and pearled millets.

Cereals do not contain either vitamin A or vitamin C except that yellow maize and some varieties of sorghum contain small amounts of β -carotene.

Cereals are generally considered to have low fat content as determined by ether extraction, which represents only the free fat. Recent studies however have shown that cereals contain much more fat, if the bound fat is also taken into account. The total fat including bound and free fat can be determined by hydrolysis with HCl followed by chloroform methanol extraction. The total fat content thus determined in cereals may vary from 2 to 5 per 100 g. Considering the amount of cereals consumed it is estimated that fat present in cereals in our diets can meet more than 50% of our essential fatty acid requirement. Cereals together

with pulses can nearly meet the EFA requirement of an adult.

Pulses

Pulses (or legumes as they are also called) are rich source of protein in our diets. In a vegetarian diet or a diet containing low amounts of animal foods, they are an important source of protein. The major pulses which find an important place in our dietaries are tur (Arhar), bengalgram, blackgram, greengram, lentil. Some of them (bengalgram, greengram) are used as whole gram also. Others which are used as whole are cow pea, field bean, rajma. In amounts used, pulses and legumes do not contribute much to the total mineral intake. However being rich in B-vitamins they can contribute significantly to B-vitamin intake. Like cereals they do not contain any vitamin A or Vitamin C but germinated legumes contain some vitamin C.

The protein of pulses/legumes are of low quality since they are deficient in methionine and red gram is deficient in tryptophan also. However, they are rich in lysine. Hence they can supplement proteins of cereals and the quality of the protein from a mixture of cereals and pulses is superior to that of the either one. The most effective combination to achieve maximum supplementary effect is 4 parts of cereal protein + 1 part of pulse protein. In terms of the grains it will be 8 parts of cereals and 1 part of pulses.

Pulses with their higher content of total fat (visible + invisible) contribute along with cereals to meet the EFA needs of an adult.

Nuts and oilseeds

Like pulses, oilseeds and nuts are rich in protein, and in addition they contain a high level of fat. They are thus source of protein and concentrated source of energy. They do not contain an appreciable amount of carbohydrate but contain high levels of B-vitamins. Groundnuts are particularly rich in thiamine and nicotinic acid. However in amounts they are consumed they may not contribute much to the intake of vitamin and minerals. Oilseeds produced in the country are mostly used for oil extraction. The meal obtained after extraction of the oil from the seed is richer in protein than the seed itself. Oilseed cake was mostly used for cattlefeed and in the past the

quality of cake produced was not good enough for human consumption. Further Ghani pressed cake had a high level of residual oil leading to rancidity of the cake on storage. In recent years however improved method of extraction and careful handling of cake have helped production of edible grade deoiled meal. This protein-rich meal is being used for the development of various products, for use in feeding programmes. Protein isolates are also being produced from these deoiled meal.

Oilseed proteins, as other legume proteins are of inferior quality; deficient in amino acid; methionine but rich in lysine. Sesame seed proteins are however richer in methionine. Because of their high lysine content oilseed meals/proteins are used along with cereals for product development for child feeding and as weaning foods.

It has been shown in recent years that oilseeds particularly the groundnut get affected with fungi if they are not dried and handled at the post harvest stage. The fungus affects many foods besides groundnut. This fungus elaborates some toxins which are deleterious to health and some of them are carcinogenic. Aflatoxin produced by *Aspergillus flavus* which affects groundnut has been shown to cause liver damage. Chronic consumption of the foods contaminated with aflatoxin can lead to liver carcinogenesis in experimental animals, man and monkeys. It is necessary that only clean groundnuts should be used as food and for oil extraction, the seeds should be properly dried, handled properly during storage, transportation, to avoid fungal attack so that neither the oil nor the cake has aflatoxin contamination. If contamination is unavoidable, efforts should be made to keep the level of aflatoxin contamination within safe limits.

Sugars and jaggery

Sugar and jaggery are sweetening agents in beverages and other foods to increase palatability. They essentially supply energy. Jaggery may contain some iron. Excessive consumption of refined sugar must be avoided as it may lead to heart diseases in adults and carries in children.

Fats and oils

The visible fats commonly consumed in India are, butter, ghee, hydrogenated oils and various vegetable oils like groundnut oil, safflower

oil, gingili oil, coconut oil, etc. All fats are concentrated source of energy providing 9 kcal/g. Vegetable oils, contain polyunsaturated fatty acids like linoleic and linolenic acids which are needed to meet the EFA requirement. As described earlier, the total fat (bound & free) from cereals and pulses by itself can nearly meet the EFA requirement of an adult. Fat is required in the diet for: (a) to provide essential fatty acids, (b) to improve palatability of diet and, (c) to provide energy density to ensure adequate intake of energy particularly among young children. Visible fat requirements are fixed currently taking into account the contribution from invisible fat in the diet. High fat intake is also harmful leading to cardiovascular complications. Total calorie from visible fat should not exceed 20%. Also to meet the minimum needs 5-10% of calories may be derived from visible fat. Some vegetable oils like red palm oil contain a high concentration of β -carotene (upto 800 μ g/g). Although highly unsaturated fats like safflower oil contain a high level of PUFA it is now considered that such high levels of PUFA are undesirable because of the problem of peroxidation. Oils like groundnut oil with moderate amounts of PUFA are considered equally good to satisfy our EFA requirements. Per capita availability of oil in our country is about 18 g which together with the invisible fat of the cereal based diet is considered adequate to meet our nutritional needs of fat provided this quantity of oil is equally distributed to all segments of our population. Being an expensive item of diet, diets of poor contain no or very little visible fat. To meet the oil demand newer sources of edible oil are being explored. In this context it must be pointed out that rice bran oil is an important edible oil source which has fatty acid composition similar to that of groundnut oil. This oil has a special property of reducing blood cholesterol a property not shared by groundnut oil.

Fruits and vegetables

Fruits: Fruits are generally good sources of vitamin C. Amla and guava are the rich sources of this vitamin. Yellow fruits like mango and papaya in addition contain β -carotene, a precursor of Vitamin A. The commonly used banana is a good source of carbohydrates and hence energy. Dried fruits are good source of iron. Fruits also contain

pectins which provide bulk to the diet and helps bowel movement. Seasonal fruits must be included in the diet to supply vitamin C and β -carotene.

Vegetables

Green leafy vegetables: Many types of greens are consumed all over our country. The commonly consumed greens are: palak, amaranth, fenugreek, drumstick, mint, etc. The green leafy vegetables are rich source of calcium, iron and β -carotene and vitamin C, riboflavin and folic acid. These greens are inexpensive and it is advisable to include atleast 50 g of GLV daily in one's diet. They contain all important nutrients required for growth and maintenance of health. Hence GLV must be consumed by children, pregnant and nursing women to obtain much needed β -carotene, calcium and iron. This is particularly so on a predominantly cereal based diets of the poor who suffer from the dietary deficiency of these nutrients. Hence steps must be taken to encourage cultivation of GLV in kitchen gardens and school gardens so that they are available all through the year. Use of green leaves from trees like drumstick, agathi, etc. helps to obtain them regularly without much effort if a tree is planted in the backyard.

Roots and tubers: Some of the important root vegetables which are commonly consumed in our country are tapioca, potato, sweet potato, carrots, yam, colocacia. They are all rich in carbohydrate and can form an important source of energy in our diets. Carrots and yellow varieties of yam are rich in carotene and potato is a significant source of vitamin C. Tapioca and yams are rich in calcium. Tapioca consumed in Kerala as energy source helps to meet a short supply in cereals during drought conditions.

Other vegetables: Vegetables which do not come under green leavy vegetables and roots and tubers are classified under this head. This food group includes, several commonly used vegetables like brinjal, ladies fingers, French beans, guar beans, various gourds, tomatoes, etc. They not only add variety to the diet but also provide vitamin C and some minerals. These vegetables are also a source of dietary fibre in the diet and provide bulk to the diet.

Animal foods

Milk and milk products: This group covers liquid milk, milk powder, fermented products like curds, butter milk, etc. Milk has always been considered an ideal food for infants and children and a good supplementary food for adults. Milk is not only a source of good quality protein, but also of calcium and riboflavin besides some other nutrients. Milk is however deficient in iron and vitamin C. Although milk from different species have similar nutritional value, there are some differences in the composition between human and cow's milk. Human milk has less protein than cow's milk, the difference is mainly due to lower content of casein in human milk. Human milk also has higher lactose content as compared to cow's milk. Between cow's and buffalo milk, the latter has a higher content of fat expressed on moisture free basis. Unless the whey is discarded the products of milk retain all the nutrients present in the milk. However skimmed milk powder has no fat but has a higher level of protein and sugar on a moisture free basis.

Milk should find a place in any balanced diet particularly in a vegetarian diet, to provide some good quality protein, sufficient calcium and riboflavin which are difficult to obtain in adequate quantities solely from plant foods. An adult diet should have atleast 150 ml of milk a day while children, pregnant and lactating women should receive atleast 250 ml milk a day. Although milk production in our country has increased in the past decade or so, per capita availability still remains at 140 ml/day. The average consumption of milk in rural areas is around 70 ml per c.u. Among urban middle class it is around 250 ml. Vigorous efforts must be made to further increase milk availability in the country atleast to meet the minimum nutrition goals. Under the existing condition, efforts must be made to channelise the available milk to the vulnerable groups like young infants, preschool children, pregnant and lactating women. Bold policy decisions are required in this regard.

Eggs: Eggs are rich source of all nutrients except ascorbic acid. Egg proteins have the highest nutritive quality as compared to any dietary protein and therefore it is used as standard for evaluating the quality of other proteins. However

the hen egg white contains some riboflavin also. Raw egg white contains anti-nutritional factor avidin which binds with biotin and make it unavailable. Egg white also contains a protein called ovomucoid which can inhibit trypsin activity. The egg white of duck has a more powerful trypsin inhibitor (ovomucoid) than hen egg white. However, cooking and boiling destroys these anti-nutritional factors. The ovomucoid of duck egg white requires a more drastic heat treatment (autoclaving) to inactivate it. There are attempts to increase egg production in the country. Inclusion of egg in diets of vulnerable groups like children and pregnant women may improve their diet and the essential nutrient supply.

Flesh foods

Flesh foods like meat, poultry and fish are rich in good quality protein and they also provide B-vitamins. A special feature of flesh foods is their content of B₁₂ which is absent in plant foods. Flesh foods are also source of vitamin A (liver). Fish is a good source of calcium. Fish also contain W-3 fatty (polyunsaturated) acids which are known to protect against cardiovascular diseases. Animal food production in our country is very low. Since some amount of animal food is useful in improving the quality of vegetarian diet, all efforts should be made to increase production of fish for which there is a good potential in our country and make it available to all segments of population which can consume it. Fish can be a substitute for pulses in cereal based diets of the poor.

Condiments and spices

These are accessory foods mainly used for flavouring food preparation to improve their palatability. These are used in small amounts and their contribution to nutrient intake is very limited. Some of these spices however are rich in iron, trace metals and potassium. Some of the condiments like chillies and coriander may provide some β -carotene. Green chillies provide β -carotene and vitamin C. Most of the spices contain a high level of tannin (viz. turmeric) which may interfere with iron absorption. These spices also contain several pharmacologically active substances like choline, biogenic amines, etc. Some of them like asopheetida and garlic have antibacterial property and inhibit putrifying bacteria.

Salt

Salt is also an important additive to our diets. Salt is used in our country is mostly sea salt and do not contribute anything but NaCl. Salt intake in our country is around 15 g per caput/day which may appear on the higher side. High salt intakes are associated with hypertension. It is possible in a tropical country like India where there may be excessive loss of Na through sweat, high level of

NaCl is needed. But exact requirement of sodium by our people is not known. Sodium derived from foods is not significant. But potassium required by the body is primarily derived from food. A proper ratio of sodium to potassium intakes should be maintained to satisfy electrolyte balance and avoid undesirable consequence of excessive sodium.

4. EFFECT OF PROCESSING ON NUTRITIVE VALUE OF FOODS

Almost all foods consumed by man are subject to cooking, the exception being fruits and some greens and vegetables, which are used raw for salads and chutneys. When one talks of nutritional content of foods, it should be related to cooked foods that reach the table. However, cooking practices vary from one region to another in the country and even from one household to another. Hence cooked food cannot be standardised and information on the effect of a wide range of cooking practices on nutritive value of foods is not available. Cooking has both adverse and beneficial effects. The effects of some typical methods of cooking on nutritive value are discussed.

The following processes are involved in cooking as practiced in India. Wet method of cooking by boiling, steaming or pressure cooking; dry method of cooking at high temperature like frying, roasting and baking. The loss of nutrients on cooking depends on the temperature, duration of cooking and the nutrient.

The loss of nutrients during the ordinary cooking is not as much as it is generally believed. Ordinary cooking causes little loss of protein fat or carbohydrate in cereals, pulses and meat. Some protein may be lost if vegetables are cooked in water containing salt and the cooking water is discarded. If the cooking water is thrown away there is considerable loss of minerals, especially Na, K and Ca due to leaching. It is therefore advisable either to cook in a minimum amount of water or to use the cooking water in soups and gravies. Root vegetables do not suffer much loss of nutrients by either wet or dry method of cooking since outer skin prevents leaching out of nutrients. It is therefore recommended that the root vegetables are cooked with their skin and peel them before using them in other preparations. Cutting vegetables into small pieces and exposing them to air before cooking may result in loss of vitamins particularly vitamin C. It is advisable to cut larger size pieces and put into boiling water immediately and cook for a short period. Steaming however prevents losses due to leaching.

Rice has a special problem with regard to loss of nutrients, i.e. minerals and vitamins during cooking, since its normal content itself is low. Loss

of nutrients in cooking of rice is important since rice forms a major component of diet in many parts of the country supplying several nutrients in significant amounts. Certain amount of minerals and vitamins are lost even during preliminary washing before cooking. Hence washing with large quantity of water and repeated washing must be avoided. Washing may remove as much as 40% of thiamine and nicotinic acid. Rice must be washed if washing is necessary with minimum amount of water. Boiling rice in excess water and discarding the water (kanjee) also result in loss of some amount of minerals and vitamins. However, loss due to discarding of kanjee is not as much as during washing. It is a good practice to wash with minimum amount of water i.e. if washing is necessary at all, and cooking it in just sufficient amount of water so that all the water is absorbed and no kanjee is discarded. However, if paddy is parboiled and parboiled rice is used, loss of vitamins and minerals due to washing and discarding kanjee is much less. It is because during parboiling the nutrient diffuses in to the grain and protective gelatinised starch coating is formed on the grain preventing leaching.

More than the minerals, it is the vitamins especially those of water soluble B group which show a greater loss during cooking. Vitamin A and carotene are not lost during wet cooking. However, cooking in acid media with tamarind and other acids has a protective effect against vitamins. Vitamin C is lost during exposure of cut vegetables. Cooked vegetables when exposed to atmosphere before serving may also result in loss of vitamin C. It is preferable to cook vegetables in minimum amount of water with the vessel covered with a lid and to consume as soon as possible.

Eggs appear to suffer little loss in nutritive value during conventional cooking. If fat is repeatedly heated during frying, may contain toxic substances, due to peroxidation and rancidity. It may be a desirable practice to use a minimum quantity of fat for frying and avoid using it over and over again.

Excessive heating may compromise nutritive value of proteins, particularly if the heating is done in presence of free reducing sugars since in this

process amino acid lysine of proteins combine with carbohydrate rendering lysine unavailable. Excessive heating of milk which contain lactose and other foods with jaggery may be undesirable since this may lead to browning and reduce the protein quality. Even storing for prolonged periods, foods like milk products under moist condition may lead to browning.

Cooking has also some beneficial effects. It improves the appearance and palatability of foods and confers new flavours. Cooking also destroys harmful food-borne microorganisms. Digestability of several foods, particularly of starch improves on cooking. During cooking starch swells and cell walls burst making it easy for the enzymes in the digestive juices to have access to starch and digest it. Cooking eggs helps in destroying avidin which is known to bind biotin and make it unavailable.

Some legumes contain trypsin inhibitors, particularly soya bean. Protein digestibility is reduced by trypsin inhibitor. Heating or autoclaving the legumes helps destroy the trypsin inhibitor and improve protein quality. Similarly duck eggs also contain a trypsin inhibitor in its white portion. This inhibitor can be destroyed by prolonged boiling or autoclaving. In general, quality of proteins improve after cooking since their access to enzyme and their digestibility improves.

Thus cooking as practiced has several advantages in improving the quality, digestibility and palatability. At the same time, cooking also can reduce the vitamin and mineral content, but taking certain precautionary measures like cooking in limited water and in presence of acids it can help preserve vitamins to a greater extent.

5. NUTRIENT REQUIREMENTS AND RECOMMENDED DIETARY ALLOWANCES

Man requires a wide range of nutrients to keep him healthy and active. One of the aims of nutrition research has been to determine physiological requirements of various nutrients by different age and sex groups. Considerable information on this subject based on research over the past several decades is available. These are continuously updated and also new areas on nutritional needs where there is lack of data are being explored. The information on physiological requirement of nutrients to be of practical value must be translated in terms of foods consumed in habitual diets. This exercise has to be done by each country since food habits differ from country to country. International organisations like FAO and WHO also undertake this exercise on a global scale. Expert Committees of different countries examine the available information on nutrient requirements and the national food habits and arrive at what is normally called Recommended Dietary Allowances (RDA) or Intakes (RDI).

RDA is defined as the intake of nutrient derived from diet which keeps nearly all people in good health. RDA are given for different groups; adults, infants, children, pregnant and lactating women. RDA takes into account individual variation in nutrient needs and also the availability of nutrients which may vary from diet to diet.

The dietary allowances for Indians were first recommended in 1944 by the Nutrition Advisory Group. These recommendations were revised in respect of energy and protein in 1958. In 1968 and 1978, a set of recommendations were made for all the nutrients, except calories. An Expert Group constituted by the ICMR met again in April 1988 to consider the revision of nutrient allowances for Indians. This Committee revised the earlier recommendations wherever new data were available. The revised recommendations include energy, fat, vitamin A. The latest recommendations are given in Appendix.

6. HABITUAL DIETS IN INDIA AND THEIR ADEQUACY

Extensive diet surveys carried out in different parts of our country both in the rural and urban areas indicate that diets are predominantly based on cereals. Diets of poor income groups are deficient in several nutrients, namely; energy, vitamin A, calcium, riboflavin, iron. Dietary deficiency of these nutrients occur more frequently and to a greater degree among children, pregnant and lactating women whose requirements of nutrients are higher than others. General deficiency of these nutrients in their diet is reflected in widespread prevalence of deficiency diseases like anaemia, PEM, vitamin A and B complex deficiency (predominantly riboflavin) and goitre (in endemic areas). Although dietary deficiencies of nutrients are primary cause of these deficiencies, they are aggravated by infective morbidity among the poor due to bad environmental and personal hygiene. These diets of the poor are predominantly based on cereals which provide 80% of energy and some amount of other nutrients except vitamin A and vitamin C. Cereals have to be supplemented with food items like pulses, vegetables, fruits, animal products including milk and fat to make the diet more balanced and adequate in all nutrients. Such foods are consumed only in small quantities, that too infrequently by the poor and hence their diets are inadequate with respect to many nutrients, particularly vitamin A, iron, riboflavin. Only diets of high income and middle income groups in urban areas can be said to be satisfactory. Surveys carried out by the National Nutrition Monitoring Bureau (NNMB) over the past decade in rural and urban areas of 10 States of the country have brought out this fact clearly. In Table-3, the dietary and nutrient intakes in urban (middle and slum dwellers) and rural poor based on pooled data from NNMB are given. It is seen that while the diet of the middle income groups in urban areas is fairly satisfactory, the diets of rural people and slum dwellers are inadequate in many respects. The intakes of protective foods like, pulses, leafy and other vegetables, milk fruits, fats and oils are quite low in the diets of the rural and urban poor.

Diets of the poor will continue to be grossly inadequate for long time to come unless there is

phenomenal improvement in their economic status to afford an adequate diet. Even then availability of protective foods may still be a bottleneck. The current production of milk, animal foods, vegetables, fruits, fats and oils are grossly inadequate to meet the needs of all the population in the country according to the currently recommended nutritional standards. Major thrust must be towards increasing the per capita availability of the above protective foods.

Table-3
Average intake of nutrients by rural and urban groups (g/cu/day)

Foodstuff	Rural (average)	Urban MIG	Slum
Cereals & Millets	446	361	416
Pulses	32	49	33
Leafy vegetables	10	21	11
Other vegetables	48	89	40
Fruits	15	66	26
Milk	70	250	42
Fish & flesh foods	11	22	19
Fats & Oils	9	35	13
Sugar/Jaggery	18	31	20

Nutrient content of rural and urban diets

	Rural MIG*	Urban MIG*	Slum
Protein (g)	60.5	66.74	57.77
Fat (g)	—	61.74	28.92
Calories (Kcal)	1994	2140	1825
Calcium (mg)	368	941	546
Iron (mg)	30.1	31.7	29.6
Vitamin A (µg)	470.0	902.0	592.0
Thiamine	1.69	1.76	1.74
Riboflavin	0.91	1.31	0.97
Niacin	15.2	12.70	12.77
Vitamin C (mg)	42.6	103.08	43.05

* Middle income group

However, as an immediate measure attempts may be made to improve ill balanced diets of the poor by inclusion of inexpensive foods to prevent atleast the major nutrition deficiency diseases like vitamin A deficiency and iron deficiency anaemia. These diets can be improved atleast by (a) replacing a single cereal (say rice) with mixed cereals, one of them being a millet. Inclusion of atleast 50 g of GLV improves intake of vitamin A, iron and

calcium. Inclusion of inexpensive yellow fruits like papaya or mango (in season), and greens improves vitamin A and vitamin C intakes. Inclusion of atleast 150 ml of milk will improve intake of riboflavin, calcium besides improving protein quality of the diet. Another extra 10 g of oil will increase energy and EFA intake. An example of least cost improved diet by modifying the existing diet as described above is given in Table-4.

Table-4
Low cost balanced diet (sedentary man)

Cereals	460
Pulses	40
Leafy vegetables	50
Other vegetables	60
Roots & tubers	50
Milk	150
Oil & fat	40
Sugar & Jaggery	30

Intake of Nutrients

Calories (Kcal)	2738.60
Protein (g)	66.60
Calcium (mg)	781.60
Iron (mg)	62.20
Vitamin A (µg)	715.00
Riboflavin (mg)	1.15
Thiamine (mg)	2.45
Vitamin C (mg)	74.80
Niacin (mg)	15.66
Total fat (g)	66.90

7. NUTRITIONAL DEFICIENCIES, THEIR PREVENTION AND CONTROL

It was indicated in the earlier section that there are serious deficiencies in the diets of our population particularly among the poor. As a consequence of this dietary deficiency, several nutritional deficiencies with clinical manifestations and disabilities are encountered in our country, namely (i) protein energy malnutrition among preschool children, (ii) vitamin A deficiency among children, (iii) iron deficiency anaemia in all groups, particularly among women, children and pregnant women, (iv) iodine deficiency — endemic goitre, (v) B-complex deficiency. The first four are often referred to as 'big four' and have been the concern of health authorities in the country. PEM and vitamin A deficiency occur mostly among preschool children. Anaemia is prevalent in all groups, highest prevalence being among pregnant women, preschool children and women during reproductive age. These diseases, if untreated or not prevented, may lead to many disabilities. PEM results in poor growth and development among children. Vitamin A deficiency when it becomes severe leads to nutritional blindness. Anaemia leads to impaired work capacity, impaired resistance to infection and poor pregnancy outcome. Goitre due to iodine deficiency results in thyroid insufficiency, impaired metabolism and mental retardation.

The primary cause of malnutrition as manifested in the above deficiencies is inadequate and faulty diets. As discussed earlier, diet survey data indicates widespread prevalence of deficiencies of energy, vitamin A, folate, iron, riboflavin and iodine (in endemic areas). These deficiencies are particularly high among vulnerable groups, namely preschool children, women, pregnant women. Apart from poverty and other socioeconomic factors, environmental factors also play an important part in aggravating the dietary deficiency and precipitating nutritional deficiency diseases. These precipitating factors are the widespread chronic infection among the poor living under conditions of poor environmental sanitation and personal hygiene. Thus a marginal intake of nutrients which by itself may not lead to clinical deficiency may do so when infectious diseases are superimposed.

Major nutrition deficiency, diseases and their control

Protein Energy Malnutrition

Protein energy malnutrition (PEM) is an important nutrition problem among preschool age children. This leads to various degrees of growth retardation. When growth retardation is severe, functional deficiencies, like resistance to infection, poor intellectual development may result. Earlier the main cause of malnutrition among children was considered to be due to protein deficiency. However, subsequent systematic study of the habitual diets of these children indicated that the concentration of protein in their diets was adequate, but they were suffering from energy or food inadequacy since they were not eating enough of their habitual diet. The average energy deficit was found to be 300 Kcal/day. It must be pointed out that diets of these children with PEM are deficient in other nutrients as well, namely, vitamin A, iron, calcium and riboflavin. It is also known that infections like measles and diarrhoea aggravate PEM. Based on these findings on dietary intake of these children, a programme to combat PEM through supplementary feeding providing 300 Kcal and 10 g protein is in operation as a part of public health and Child Welfare Programmes (ICDS). A number of difficulties in implementing this programme successfully have been identified. Effective implementation of this programme will certainly help to reduce the prevalence of PEM. Since these children also suffer from other deficiencies like vitamin A, calcium, iron and riboflavin, it may be a wise policy to add these nutrients to the supplementary food at sufficient concentrations so as to make good the deficit in their habitual diets. This way most of the major nutritional deficiency among children can be overcome through a single intervention programme, viz. supplementary feeding. However, to achieve this the feeding programme must be made more effective.

Vitamin A deficiency and nutritional blindness

Vitamin A deficiency is a major nutritional problem affecting young children leading to blindness. It is estimated that nearly 20,000

children go blind every year due to severe vitamin A deficiency and keratomalacia. It has been established that PEM, measles can aggravate vitamin A deficiency and contribute to nutritional blindness. Prevention of vitamin A deficiency should therefore receive top priority in our national nutrition programmes. Two approaches are advocated. One is, educating the mothers to feed their children daily with green leafy vegetables and yellow fruits like papaya to provide them with much needed β -carotene. A more effective alternate approach is administering a massive dose of vitamin A, i.e. 200,000 I.U. every six months. This approach is based on the property of vitamin A that it can be stored in liver and utilised slowly over time. This programme of administering 200,000 IU vitamin A in a spoonful of groundnut oil is in operation in most states as a part of maternal and child health services. Certain difficulties are encountered in its effective operation, but if properly implemented it can bring down blindness due to vitamin A deficiency significantly.

As to encouraging increased consumption of vitamin A rich foods through nutrition education, several attempts have been made to educate the mother. Mothers are encouraged to feed their children with GLV and papaya. These two can be grown in the backyard as kitchen garden. These efforts must be pursued vigorously since adequate dietary intake of Vitamin A/carotene should be the foundation of any long term solution to prevent the problem of vitamin A deficiency.

Anaemia

Anaemia is another important nutritional problem affecting all segments of the population in general and children, women and pregnant women in particular. In the latter groups prevalence of anaemia may be as high as 60-70%. Anaemia in our country is essentially due to iron deficiency although in children and pregnant women, folate deficiency also plays a part. Although our diets contain fairly good amount of iron, its absorption is very poor (2-3%). Anaemia can be aggravated by environmental factors which lead to blood loss e.g. hookworm infestation. All the available information indicate that anaemia can be prevented by increasing iron intake in the population. Two approaches are used to achieve this. One is

therapeutic supplementation of iron and folate tablets and the other is fortification of a dietary item with iron. A public health programme of distribution of iron folate tablets to pregnant women (during last trimester) and preschool children is in operation as a part of MCH services. This approach is designed to achieve results in a limited time, like in pregnancy. There are however certain problems in making this programme effective and to have an impact on the problem of anaemia. The bottlenecks are poor motivation of the beneficiaries to take tablets regularly, poor supply of tablets for distribution, etc. These shortcomings have to be overcome to make the programme more efficient and effective.

An alternate, preventive approach is to improve iron balance in the entire population through fortification of a commonly consumed dietary item with iron. Towards this end a technology for fortifying salt with iron has been developed in India by the National Institute of Nutrition and its effectiveness in reducing anaemia was demonstrated in pilot trials. Currently attempts are being made to manufacture and distribute iron fortified salt in Tamil Nadu. Hopefully this will be extended to other parts of the country.

Goitre

The major nutritional deficiency leading to goitre and cretinism is iodine deficiency. Iodine deficiency disorders (IDD) are endemic in Sub-Himalayan belt in North India affecting nearly 120 million people. Recently new pockets of IDD have been identified in other parts of India particularly in tribal belts, in Gujarat, Madhya Pradesh, Andhra Pradesh, Maharashtra, Kerala and Karnataka, bringing the total affected population to 170 million. Although goitre is mainly due to iodine deficiency in some areas, goitrogens present in some of the habitual foods, may be contributing to the precipitation of iodine deficiency when iodine intake is marginal.

Control and prevention of goitre has been principally based on providing extra iodine to the population through iodised salt distribution or iodised oil injection in hyperendemic areas. These approaches have been successfully used in other countries to eliminate goitre. But in India, though iodised salt programme was initiated in 1955, the

programme has had very little impact on the problem of goitre due to various logistic reasons: (a) enough iodised salt was not produced, (b) lack of monitoring of iodised salt distribution and (c) its iodine content at the point of consumption. Recently Government has become alert to these problems and has taken a decision to iodise all edible salt by 1993 for effective coverage of population and also increase the level of iodisation from 20 to 30 ppm. These steps hopefully will have an impact in reducing the prevalence of goitre in the country.

Other nutritional diseases

Other nutritional disease commonly encountered in the country is B-complex deficiency, especially riboflavin deficiency leading to angular stomatitis, glossitis and cheilosis. Pellagra which is primarily due to nicotinic acid deficiency is reported to be caused by excess leucine in the

staple jowar leading to amino acid imbalance and decreasing conversion of tryptophan to niacin. Other nutritionally related disease, fluorosis due to excess fluoride consumption through water, occur in Nalgonda district of Andhra Pradesh and Patiala district of Punjab.

In summary the nutrition scenario in the country is not very encouraging. Four/five major nutritional deficiencies occur widely among poor due to nutritionally inadequate diet, some time aggravated by infection, etc. The long term solution for the problem of malnutrition is to improve the consumption of protective foods by the affected population through economic upliftment and increased production of such foods. However a short term measure, intervention with specific nutrients is the approach which is currently used as a part of health and welfare programmes. Various delivery technologies have been developed for this purpose.

8. DIETARY GUIDELINES

Food groups and food exchange system

Various food items that are commonly consumed in our country which are the main source of nutrients in our diet were discussed. Normally these foods are used in formulating nutritionally adequate diets for various categories of people to meet their needs as per nutritional standards (RDA) and also for formulating special diets for therapeutic purposes. In order to do this conveniently 'food group system' and food exchange system are widely followed.

The food group system converts quantitative nutrient data into food related information that can be used both by consumer and health professionals in diet planning to achieve nutritional adequacy.

Foods described earlier can be placed into five groups depending upon the content of major nutrients (Table-). The five groups are: (a) cereal grain products, (b) pulses or legumes (c) milk, egg and flesh foods, (d) fruits and vegetables and (e) fats and sugar. The five group plan allows a person to plan his/her diet to achieve the nutritional adequacy as per Recommended Dietary Allowances. Information on foods which are rich sources of nutrients are given in Table-1.

The five food group system can be used by health professionals for the following purposes.

(1) Tool for nutritional assessment and screening.

A brief dietary history system can disclose inadequacies of nutrient from any of the five groups. This information can be the first clue for the possibility of the subject may be at the risk of developing nutritional deficiency.

(2) Tool for nutritional counselling:

The dietary history based on the five food group system allows a health team to counsel or teach a patient about nutrition.

(3) Explaining therapeutic diets to a patient:

Therapeutic diets are scientifically based on

nutrient composition and food groups which can be used in menu planning.

(4) **Food labelling and surveillance system:** Food groups can be used for food labelling and for nutrition surveillance system.

The food exchange system

Food exchange system allows one to choose a variety of foods with adequate nutrients. The food exchange system is important in planning a nutritious diet. Essentially the food exchange system can be used to select foods in familiar measures that are adequate in nutrient content and satisfy the requirement of a given individual.

Menu planning

The five food group plan permits an individual to plan a menu to achieve nutrient intakes as specified by RDA. The food exchange system is important in this planning of a nutritious diet. The two components, namely, nutrient density and balance are achieved when these guidelines are used. The food exchange system can be used to select a variety of foods that are adequate in nutrient content and satisfies requirement.

While using the food exchange system for menu planning the following points should be considered.

The foods in the five food groups Table-1 can be broadly classified into six exchange lists, as given in Table-2. Each list consists of foods of specific serving sizes and are standardised in terms of energy (Kcal), protein, fat and carbohydrate. A particular food is placed in the list based on its energy or protein content. Individual foods on the same list may be exchanged for each other but not for foods of different lists. Exchange lists for different foods, vegetables A & B, fruit, pulse, legume, cereal, meat, milk, fat and sugars can be computed in terms of servings of the food and the nutrients they supply.

Table-1
Five Food Group System

Food Group	Main Nutrients
Cereals Grains and Products Rice, Wheat, Ragi, Bajra, Maize, Jowar Barley, Riceflakes, Wheat flour.	Energy, Protein, Invisible fat Vitamin-B1, Vitamin-B2, Folic Acid, Iron, Fibre
Pulses and Legumes Bengalgram, Blackgram Greengram, Redgram, Lentil (whole as well as dhals), Cowpea, Peas Rajmah, Soyabean Beans etc.	Energy, Protein, Invisible fat, Vitamin-B1, Vitamin-B2, Folic Acid, Calcium, Iron Fibre
Milk and Meat Products Milk: Milk, Curd, Skimmed milk, Cheese	Protein, Fat, Vitamin-B2, Calcium
Meat: Chicken, Liver, Fish, Egg, Meat	Protein, Fat, Vitamin-B2
Fruits and Vegetables Fruits: Mango, Guava, Tomato, ripe, Papaya, Orange, Sweet lime, Water melon,	Carotenoids, Vitamin-C, Fibre
Vegetables (Green Leafy): Amaranth, Spinach, Gogu Drumstick leaves, Coriander leaves, Mustard leaves, Fenugreek leaves.	Invisible Fats, Carotenoids, Vitamin-B2, Folic Acid, Calcium, Iron, Fibre
Other Vegetables: Carrots, Brinjal, Ladies fingers, Capsicum, Beans Onion, Drumstick, Cauliflower.	Carotenoids, Folic Acid, Calcium, Fibre
Fats and Sugars Fats: Butter, Ghee Hydrogenated oils, Cooking oils like Ground nut, Mustard, Coconut.	Energy, Fat, Essential Fatty Acids
Sugars Sugar, Jaggery	Energy

Table-2
The Food Exchange System

S. Exchange No. List	Serving Size/or Raw Weight in (g)	Carbo-hydrate (g)	Protein (g)	Fat (g)	Energy (K.Cal)
1 Vegetable Green leaf Other	½ Cup ½ Cup	6 6-10	Nil Nil	* Nil	30-40 50-60
2 Fruit	Varies	10	Nil	Nil	40
3 Cereal	25	19-21	2-3	*	85
4 Legumes & Pulses	25	15	6	*	85
5 Milk & Meat	½ Cup 75	4 Nil	3.5 7.5	4.0 6.0	65 85
6 Fat # & Sugars	10 10	Nil 10	Nil Nil	10.0 Nil	90 40

Visible Fat, *Invisible Fat

1 Cup=200 ml.

NOTES ON FOOD COMPOSITION TABLES

The information contained in the food composition tables which follow, is for the most part, based on analysis of foods made at the National Institute of Nutrition, formerly at Coonoor and now at Hyderabad. In order to give wider coverage both in terms of foodstuffs and in terms of food constituents, analytical data obtained from various other centres and laboratories like the University College of Science and Technology, Calcutta; Haffkine Institute, Bombay; Central Food Technological Research Institute, Mysore; State Food and Drug Laboratories, Ambala Cantonment and Nutrition Laboratory, Patna, have also been made use of. The work in most of these laboratories was aided by grants from the Indian Council of Medical Research, New Delhi. In addition, results of analysis of Indian foodstuffs published in various scientific journals have also been used in the compilation of the tables.

The data given relate only to the edible portion of the foodstuffs as purchased and the per cent edible matter has been given wherever possible.

The protein values were calculated from the nitrogen content, and the factor used was 6.25 for all the foodstuffs. The values for fat relate to the total ether extractives and the carbohydrate content given is the difference between 100 and the sum of moisture, protein, fat, fibre and ash contents.

The food energy was calculated from the content of the proximate principles assuming that proteins, carbohydrates and fats yield 4, 4 and 9 Kcals respectively per gm.

Carotene was estimated by extraction of the total pigments with alcohol and partitioning it with petroleum ether after saponification. The other pigments were removed by treatment with calcium carbonate and the yellow colour was measured as carotene.

The values for thiamine were obtained using the thiochrome method for the estimation, and the values for riboflavin and nicotinic acid were as far as possible those obtained using microbiological

methods of assay. Vitamin C was estimated by means of 2, 6-dichlorophenol indophenol except with coloured extracts, in which case xylene extraction method was used for the estimation.

Estimation of folic acid was done microbiologically with *L. casei* as the test organism, and the free and total folic acid values are those obtained respectively before and after incubation of the food extracts with a source of folic acid conjugase. The source of the enzyme included chicken pancreas powder a rat liver preparation and human plasma. Vitamin B12 was estimated using *Euglena gracilis* as the test organism.

The mineral elements were estimated using standard procedures (mostly AOAC). For trace element analyses of foods atomic absorption spectrophotometry was employed.

Units for vitamin A activity.

It is usual practice to express vitamin A value of foodstuff in terms of International Units of vitamin A. In vegetable foods the carotene content is usually converted to the vitamin A value assuming that 0.6 μ g of carotene is equivalent to 1 I.U. of vitamin A. However, in view of lack of definite information about the conversion of carotene to vitamin A in the body, the values for carotene are given now as μ g per 100 gms. of the foodstuff in this book. The values for vitamin A are also given as μ g retinol per 100 gm assuming that one International Unit of vitamin A is equivalent to 0.3 μ g of retinol.

Amino acid composition

The data for the amino acid composition of foodstuffs were compiled from the values available in literature and considered reliable and they included also the values obtained at the National Institute of Nutrition.

Fatty acid composition

The data on fatty acid composition of commonly consumed edible oils and fats is based on gas liquid chromatography of the methyl esters of fatty acids. The values in the tables represent the fatty acid as a percent of total fatty acid methyl ester.

Arrangement of Tables

Data on food composition of common Indian foods and less familiar foods are separately tabulated. Information on important nutrients like proximate principles and minerals, of common foods is given in Table-1 of Food Composition Tables. The data on their vitamin content is given in Table-2 and on trace elements in Table-3. In the next three tables information on less familiar foods is given. Tables-7 and 8 respectively give data on amino acid composition of common and less familiar foods. This is followed by other tables including fatty acid composition, vitamin B12 and non-nutrient component of foods.

Although the foodstuffs are listed under two main categories as common and less familiar and in each category they are subdivided into food groups, the numbering for all the foods is done serially. To facilitate easy reference, the information and data related to each foodstuff is given under the same serial number in all the tables and appendix.

Absence of data for any nutrient in the Tables indicates only that authentic figures are not available and it does not mean total absence of the nutrient in the foodstuff.

FOOD COMPOSITION TABLES

TABLE-1
PROXIMATE PRINCIPLES: COMMON FOODS

All the values are per 100 gms. of edible portion.

Sl. No.	Name of the foodstuff	Mois- ture g.	Protein (Nx6.25) g.	Fat g.	Mine- rals g.	Fibre g.	Carbo hydrates g.	Energy Kcal.	Calcium mg.	Phos- phorus mg.	Iron mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
CEREAL GRAINS AND PRODUCTS											
1.	BAJRA	12.4	11.6	5.0	2.3	1.2	67.5	361	42	296	8.0
2.	BARLEY	12.5	11.5	1.3	1.2	3.9	69.6	336	26	215	1.67
3.	ITALIAN MILLET	11.2	12.3	4.3	3.3	8.0	60.9	331	31	290	2.8
4.	JOWAR	11.9	10.4	1.9	1.6	1.6	72.6	349	25	222	4.1
5.	MAIZE, dry	14.9	11.1	3.6	1.5	2.7	66.2	342	10	348	2.3
6.	MAIZE, tender	67.1	4.7	0.9	0.8	1.9	24.6	125	9	121	1.1
7.	PANIVARAGU	11.9	12.5	1.1	1.9	2.2	70.4	341	14	206	0.8
8.	RAGI	13.1	7.3	1.3	2.7	3.6	72.0	328	344	283	3.9
9.	RICE, parboiled, handpounded	12.6	8.5	0.6	0.9	—	77.4	349	10	280	2.8
10.	RICE, parboiled, milled	13.3	6.4	0.4	0.7	0.2	79.0	346	9	143	1.0
11.	RICE, raw, handpounded	13.3	7.5	1.0	0.9	0.6	76.7	346	10	190	3.2
12.	RICE, raw, milled	13.7	6.8	0.5	0.6	0.2	78.2	345	10	160	0.7
13.	RICE, bran	11.0	13.5	16.2	6.6	4.3	48.4	393	67	1410	35.0
14.	RICE, flakes	12.2	6.6	1.2	2.0	0.7	77.3	346	20	238	20.0
15.	RICE, puffed	14.7	7.5	0.1	3.8	0.3	73.6	325	23	150	6.6
16.	SAMAI	11.5	7.7	4.7	1.5	7.6	67.0	341	17	220	9.3
17.	SANWA MILLET	11.9	6.2	2.2	4.4	9.8	65.5	307	20	280	5.0
18.	VARAGU	12.8	8.3	1.4	2.6	9.0	65.9	309	27	188	0.5
19.	WHEAT, bulgar (parboiled)	9.8	8.2	1.6	1.5	1.7	77.2	356	37	298	4.9
20.	WHEAT, whole	12.8	11.8	1.5	1.5	1.2	71.2	346	41	306	5.3
21.	WHEAT, flour (whole)	12.2	12.1	1.7	2.7	1.9	69.4	341	48	355	4.9
22.	WHEAT, flour (refined)	13.3	11.0	0.9	0.6	0.3	73.9	348	23	121	2.7
23.	WHEAT, germ	5.2	29.2	7.4	3.5	1.4	53.3	397	40	846	6.0
24.	WHEAT, semolina	—	10.4	0.8	—	0.2	74.8	348	16	102	1.6
25.	WHEAT, vermicelli	11.7	8.7	0.4	0.7	0.2	78.3	352	22	92	2.0
26.	WHEAT, bread (brown)	39.0	8.8	1.4	—	1.2	49.0	244	18	—	2.2
27.	WHEAT, bread (white)	39.0	7.8	0.7	—	0.2	51.9	245	11	—	1.1
PULSES AND LEGUMES											
28.	BENGAL GRAM, whole	9.8	17.1	5.3	3.0	3.9	60.9	360	202	312	4.6
29.	BENGAL GRAM, dhal	9.9	20.8	5.6	2.7	1.2	59.8	372	56	331	5.3
30.	BENGAL GRAM, roasted	10.7	22.5	5.2	2.5	1.0	58.1	369	58	340	9.5
31.	BLACK GRAM, dhal	10.9	24.0	1.4	3.2	0.9	59.6	347	154	385	3.8

Sl. No.	Name of the foodstuff	Mois- ture g.	Protein- (Nx6.25) g.	Fat g.	Mine- rals g.	Fibre g.	Carbo- hydrates g.	Energy Kcal.	Calcium mg.	Phos- phorus mg.	Iron mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
32.	COW PEA	13.4	24.1	1.0	3.2	3.8	54.5	323	77	414	8.6
33.	FIELD BEAN, dry	9.6	24.9	0.8	3.2	1.4	60.1	347	60	433	2.7
34.	GREEN GRAM, whole	10.4	24.0	1.3	3.5	4.1	56.7	334	124	326	4.4
35.	GREEN GRAM, dhal	10.1	24.5	1.2	3.5	0.8	59.9	348	75	405	3.9
36.	HORSE GRAM, whole	11.8	22.0	0.5	3.2	5.3	57.2	321	287	311	6.77
37.	KHESARI, dhal	10.0	28.2	0.6	2.3	2.3	56.6	345	90	317	6.3
38.	LENTIL	12.4	25.1	0.7	2.1	0.7	59.0	343	69	293	7.58
39.	MOTH BEANS	10.8	23.6	1.1	3.5	4.5	56.5	330	202	230	9.5
40.	PEAS green	72.9	7.2	0.1	0.8	4.0	15.9	93	20	139	1.5
41.	PEAS dry	16.0	19.7	1.1	2.2	4.5	56.5	315	75	298	7.05
42.	PEAS roasted	10.1	22.9	1.4	2.4	4.4	58.8	340	81	345	6.4
43.	RAJMAH	12.0	22.9	1.3	3.2	(4.8)	60.6	346	260	410	5.1
44.	REDGRAM, dhal	13.4	22.3	1.7	3.5	1.5	57.6	335	73	304	2.7
45.	REDGRAM (tender)	65.1	9.8	1.0	1.0	6.2	16.9	116	57	164	1.1
46.	SOYABEAN	8.1	43.2	19.5	4.6	3.7	20.9	432	240	690	10.4
LEAFY VEGETABLES											
47.	AGATHI	73.1	8.4	1.4	3.1	2.2	11.8	93	1130	80	3.9
48.	AMARANTH caudatus	90.0	3.0	0.7	3.3	1.0	2.0	26	200	40	—
49.	AMARANTH gangeticus (tender)	85.7	4.0	0.5	2.7	1.0	6.1	45	397	83	3.49
50.	AMARANTH gangeticus (stem)	92.5	0.9	0.1	1.8	1.2	3.5	19	260	30	1.8
51.	AMARANTH paniculatus	78.6	5.9	1.0	3.8	2.1	8.6	67	530	60	18.4
52.	AMARANTH polygonoides	90.0	2.8	0.3	2.1	-	4.8	33	251	55	27.3
53.	AMARANTH spinosus	85.0	3.0	0.3	3.6	1.1	7.0	43	800	50	22.9
54.	AMARANTH species (Chakravarthikeerai)	80.6	4.5	0.6	4.2	1.6	8.5	57	321	71	18.0
55.	AMARANTH species (Koyakeerai)	88.0	2.8	0.5	1.2	2.2	5.3	37	292	51	2.5
56.	AMARANTH tristis	87.0	2.8	0.4	2.4	-	7.4	44	364	52	38.5
57.	AMARANTH viridis	81.8	5.2	0.3	2.8	6.1	3.8	38	330	52	18.7
58.	AMBAT CHUKA	95.2	1.6	0.3	0.9	0.6	1.4	15	63	17	0.75
59.	BATHUA LEAVES	89.6	3.7	0.4	2.6	0.8	2.9	30	150	80	4.2
60.	BEET GREENS	86.4	3.4	0.8	2.2	0.7	6.5	46	380	30	16.2
61.	BENGAL GRAM LEAVES	73.4	7.0	1.4	2.1	2.0	14.1	97	340	120	23.8
62.	BETEL LEAVES	85.4	3.1	0.8	2.3	2.3	6.1	44	230	40	10.6
63.	BOTTLE GOURD LEAVES	87.9	2.3	0.7	1.7	1.3	6.1	39	80	59	—
64.	BROAD BEAN LEAVES	77.6	5.6	0.3	1.3	3.7	11.5	71	111	149	—
65.	BRUSSELS SPROUTS	85.5	4.7	0.5	1.0	1.2	7.1	52	43	82	1.8
66.	CABBAGE	91.9	1.8	0.1	0.6	1.0	4.6	27	39	44	0.8

Sl. No.	Name of the foodstuff	Mois- ture g.	Protein (Nx6.25) g.	Fat g.	Mine- rals g.	Fibre g.	Carbo hydrates g.	Energy Kcal.	Calcium mg.	Phos- phorus mg.	Iron mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
67.	CARROT LEAVES	76.6	5.1	0.5	2.8	1.9	13.1	77	340	110	8.8
68.	CAULIFLOWER GREENS	80.0	5.9	1.3	3.2	2.0	7.6	66	626	107	40.0
69.	CELERY LEAVES	88.0	6.3	0.6	2.1	1.4	1.6	37	230	140	6.3
70.	CELERY STALK	93.5	0.8	0.1	0.9	1.2	3.5	18	30	38	4.8
71.	CHEKKUR MANIS	73.6	6.8	3.2	3.4	1.4	11.6	103	570	200	28.0
72.	COLOCASIA LEAVES (black variety)	78.8	6.8	2.0	2.5	1.8	8.1	77	460	125	0.98
73.	COLOCASIA LEAVES (green variety)	82.7	3.9	1.5	2.2	2.9	6.8	56	227	82	10.0
74.	COLOCASIA LEAVES (dried)	9.3	13.7	5.9	12.8	16.0	42.3	277	1546	308	—
75.	CORIANDER LEAVES	86.3	3.3	0.6	2.3	1.2	6.3	44	184	71	1.42
76.	COW PEA LEAVES	89.0	3.4	0.7	1.6	1.2	4.1	38	290	58	20.1
77.	CURRY LEAVES	63.8	6.1	1.0	4.0	6.4	18.7	108	830	57	0.93
78.	DRUMSTICK LEAVES	75.9	6.7	1.7	2.3	0.9	12.5	92	440	70	0.85
79.	FENUGREEK LEAVES	86.1	4.4	0.9	1.5	1.1	6.0	49	395	51	1.93
80.	FETID CASSIA (fresh)	84.9	5.0	0.8	1.7	2.1	5.5	49	520	39	12.4
81.	FETID CASSIA (dried)	9.7	20.7	3.9	11.8	10.4	43.5	292	3200	292	—
82.	GARDEN CRESS	82.3	5.8	1.0	2.2	—	8.7	67	360	110	28.6
83.	GARDEN SORREL (sepals)	91.9	0.6	0.2	0.9	1.3	5.1	25	130	20	1.7
84.	GOGU	86.4	1.7	1.1	0.9	—	9.9	56	172	40	2.28
85.	IPOMOEA STEMS	93.7	0.9	0.2	1.8	—	3.4	19	80	30	0.8
86.	IPOMOEA LEAVES	90.3	2.9	0.4	2.1	1.2	3.1	28	110	46	3.9
87.	KNOL-KHOL GREENS	86.7	3.5	0.4	1.2	1.8	6.4	43	740	50	13.3
88.	KUPPAMENI	80.5	6.7	1.4	3.1	2.3	6.0	64	667	99	17.3
89.	LETTUCE	93.4	2.1	0.3	1.2	0.5	2.5	21	50	28	2.4
90.	LETTUCE TREE LEAVES, mature	81.7	5.1	0.4	2.6	—	10.2	65	320	80	2.6
91.	LETTUCE TREE LEAVES, tender	90.2	3.6	0.2	2.2	0.6	3.2	29	170	60	3.6
92.	MANATHAKKALI LEAVES	82.1	5.9	1.0	2.1	—	8.9	68	410	70	20.5
93.	MAYALU	90.8	2.8	0.4	1.8	—	4.2	32	200	35	10.0
94.	MINT	84.9	4.8	0.6	1.9	2.0	5.8	48	200	62	15.6
95.	MODAKANTHAN KEERAI	83.3	4.7	0.6	2.3	—	9.1	61	—	—	—
96.	MUKARRATE KEERAI	84.5	6.1	0.9	1.3	—	7.2	61	667	99	18.4
97.	MUSTARD LEAVES	89.8	4.0	0.6	1.6	0.8	3.2	34	155	26	16.3

Sl. No.	Name of the foodstuff	Mois- ture g.	Protein (Nx6.25) g.	Fat g.	Min- erals g.	Fibre g.	Carbo- hydrates g.	Energy Kcal.	Calcium mg.	Phos- phorus mg.	Iron mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
98.	NERRINGI	79.1	7.2	0.5	4.6	-	8.6	68	1550	82	9.2
99.	PARSLEY	74.6	5.9	1.0	3.2	1.8	13.5	87	390	175	17.9
100.	PARUPPU KEERAI	90.5	2.4	0.6	2.3	1.3	2.9	27	111	45	14.8
101.	PONNANGANNI	77.4	5.0	0.7	2.5	2.8	11.6	73	510	60	1.63
102.	PUMPKIN LEAVES	81.9	4.6	0.8	2.7	2.1	7.9	57	392	112	-
103.	RADISH LEAVES	90.8	3.8	0.4	1.6	1.0	2.4	28	265	59	0.09
104.	RADISH LEAVES table	89.1	3.9	0.6	1.6	0.6	4.2	38	310	60	18.0
105.	RAPE stem	91.4	3.1	0.1	1.4	-	4.0	29	100	100	1.2
106.	RAPE LEAVES	84.9	5.1	0.4	2.5	1.2	5.9	48	370	110	12.5
107.	RAPE LEAVES (dried)	7.4	27.0	2.9	15.3	6.7	40.7	297	3095	500	-
108.	SAFFLOWER LEAVES	91.1	2.5	0.6	1.3	-	4.5	33	185	35	5.7
109.	SHEPU	88.0	3.0	0.5	2.2	1.1	5.2	37	190	42	17.4
110.	SPINACH	92.1	2.0	0.7	1.7	0.6	2.9	26	73	21	1.14
111.	SPINACH stalks	93.4	0.9	0.1	1.8	-	3.8	20	90	20	1.6
112.	SUSNI SAG	86.9	3.7	1.4	2.1	1.3	4.6	46	53	91	-
113.	TAMARIND LEAVES, tender	70.5	5.8	2.1	1.5	1.9	18.2	115	101	140	0.30
114.	TURNIP GREENS	81.9	4.0	1.5	2.2	1.0	9.4	67	710	60	28.4
ROOTS AND TUBERS											
115.	ARROW ROOT FLOUR	16.5	0.2	0.1	0.1	-	83.1	334	10	20	1.0
116.	BANANA RHIZOME	85.1	0.4	0.2	1.4	1.1	11.8	51	25	10	1.1
117.	BEET ROOT	87.7	1.7	0.1	0.8	0.9	8.8	43	18.3	55	1.19
118.	CARROT	86.0	0.9	0.2	1.1	1.2	10.6	48	80	530	1.03
119.	COLOCASIA	73.1	3.0	0.1	1.7	1.0	21.1	97	40	140	0.42
120.	KHAMALU	79.6	1.3	0.1	0.8	0.1	18.1	79	16	31	0.5
121.	MANGO GINGER	85.0	1.1	0.7	1.4	1.3	10.5	53	25	90	2.6
122.	ONION big	86.6	1.2	0.1	0.4	0.6	11.1	50	46.9	50	0.60
123.	ONION small	84.3	1.8	0.1	0.6	0.6	12.6	59	40	60	1.2
124.	PARSNIP	72.4	1.3	0.3	1.1	1.7	23.2	101	50	40	0.5
125.	POTATO	74.7	1.6	0.1	0.6	0.4	22.6	97	10	40	0.48
126.	RADISH pink	90.8	0.6	0.3	0.9	0.6	6.8	32	50	20	0.37
127.	RADISH rat-tailed	92.3	1.3	0.3	0.7	1.1	4.3	25	78	24	-
128.	RADISH table	94.9	0.5	0.1	0.7	0.6	3.2	16	20	20	1.0
129.	RADISH white	94.4	0.7	0.1	0.6	0.8	3.4	17	35	22	0.4
130.	SWEET POTATO	68.5	1.2	0.3	1.0	0.8	28.2	120	46	50	0.21
131.	TAPIOCA	59.4	0.7	0.2	1.0	0.6	38.1	157	50	40	0.9
132.	TAPIOCA chips dried	12.0	1.3	0.3	2.0	1.8	82.6	338	91	70	3.6
133.	TURNIP	91.6	0.5	0.2	0.6	0.9	6.2	29	30	40	0.4
134.	YAM, elephant	78.7	1.2	0.1	0.8	0.8	18.4	79	50	34	0.6
135.	YAM, ordinary	69.9	1.4	0.1	1.6	1.0	26.0	111	35	20	1.19
136.	YAM, wild	70.4	2.5	0.3	1.4	1.0	24.4	110	20	74	1.0

Sl. No.	Name of the foodstuff	Mois- ture g.	Protein (Nx6.25) g.	Fat g.	Min- erals g.	Fibre g.	Carbo- hydrates g.	Energy Kcal.	Calcium mg.	Phos- phorus mg.	Iron mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
OTHER VEGETABLES											
137.	ASH GOURD	96.5	0.4	0.1	0.3	0.8	1.9	10	30	20	0.8
138.	BEANS, scarlet runner	58.3	7.4	1.0	1.6	1.9	29.8	158	50	160	2.6
139.	BITTER GOURD	92.4	1.6	0.2	0.8	0.8	4.2	25	20	70	0.61
140.	BITTER GOURD small		83.2	2.1	1.0	1.4	1.7	10.6	60	23	38
141.	BOTTLE GOURD	96.1	0.2	0.1	0.5	0.6	2.5	12	20	10	0.46
142.	BRINJAL	92.7	1.4	0.3	0.3	1.3	4.0	24	18	47	0.38
143.	BROAD BEANS	85.4	4.5	0.1	0.8	2.0	7.2	48	50	64	1.4
144.	CAULIFLOWER	90.8	2.6	0.4	1.0	1.2	4.0	30	33	57	1.23
145.	CHO-CHO-MARROW	92.5	0.7	0.1	0.4	0.6	5.7	27	140	30	0.6
146.	CLUSTER BEANS	81.0	3.2	0.4	1.4	3.2	10.8	16	130	57	1.08
147.	COLOCASIA STEM	94.0	0.3	0.3	1.2	0.6	3.6	18	60	20	0.5
148.	COWPEA PODS	85.3	3.5	0.2	0.9	2.0	8.1	48	72	59	2.5
149.	CUCUMBER	96.3	0.4	0.1	0.3	0.4	2.5	13	10	25	0.60
150.	DOUBLE BEANS	73.8	8.3	0.3	1.0	4.3	12.3	85	40	140	2.3
151.	DRUMSTICK	86.9	2.5	0.1	2.0	4.8	3.7	26	30	110	0.18
152.	DRUMSTICK flowers	85.9	3.6	0.8	1.3	1.3	7.1	50	51	90	—
153.	FIELD BEANS, tender	86.1	3.8	0.7	0.9	1.8	6.7	48	210	68	0.83
154.	FIGS, red (Ficus cunia)	79.4	1.2	0.6	1.6	6.4	10.8	53	187	39	—
155.	FRENCH BEANS	91.4	1.7	0.1	0.5	1.8	4.5	26	50	28	0.61
156.	GHOSALA	93.2	1.2	0.2	0.5	2.0	2.9	18	36	19	1.1
157.	GIANT CHILLIES (capsicum)		92.4	1.3	0.3	0.7	1.0	4.3	24	10	30
158.	JACK, tender	84.0	2.6	0.3	0.9	2.8	9.4	51	30	40	1.7
159.	JACK FRUIT, seeds	64.5	6.6	0.4	1.2	1.5	25.8	133	50	97	1.5
160.	KANKODA	84.1	3.1	1.0	1.1	3.0	7.7	52	33	42	4.6
161.	KARONDA fresh	91.0	1.1	2.9	0.6	1.5	2.9	42	21	28	—
162.	KARONDA dry	18.2	2.3	9.6	2.8	—	67.1	364	160	60	39.1
163.	KHEKSA	90.4	0.6	0.1	0.9	1.6	6.4	29	27	38	—
164.	KOVAI	93.5	1.2	0.1	0.5	1.6	3.1	18	40	30	0.38
165.	KNOL-KHOL	92.7	1.1	0.2	0.7	1.5	3.8	21	20	35	1.54
166.	LADIES FINGERS	89.6	1.9	0.2	0.7	1.2	6.4	35	66	56	0.35
167.	LAKUCH, raw	89.4	1.6	1.2	1.1	2.8	13.9	73	67	25	—
168.	LEEKES	78.9	1.8	0.1	0.7	1.3	17.2	77	50	70	2.3
169.	LOTUS STEM, dry	9.5	4.1	1.3	8.7	25.0	51.4	234	405	128	60.6
170.	MANGO, green	87.5	0.7	0.1	0.4	1.2	10.1	44	10	19	0.33
171.	ONION STALKS	87.6	0.9	0.2	0.8	1.6	8.9	41	50	50	7.43
172.	PAPAYA, green	92.0	0.7	0.2	0.5	0.9	5.7	27	28	40	0.9
173.	PARWAR	92.0	2.0	0.3	0.5	3.0	2.2	20	30	40	1.7
174.	PINK BEANS	86.8	3.1	0.4	0.6	2.1	7.0	44	54	70	1.5
175.	PLANTAIN flower	89.9	1.7	0.7	1.3	1.3	5.1	34	32	42	1.6
176.	PLANTAIN green	83.2	1.4	0.2	0.5	0.7	14.0	64	10	29	6.27
177.	PLANTAIN stem	88.3	0.5	0.1	0.6	0.8	9.7	42	10	10	1.1
178.	PUMPKIN fruit	92.6	1.4	0.1	0.6	0.7	4.6	25	10	30	0.44



Sl. No.	Name of the foodstuff	Mois- ture g.	Protein (Nx6.25) g.	Fat g.	Min- erals g.	Fibre g.	Carbo- hydrates g.	Energy Kcal.	Calcium mg.	Phos- phorus mg.	Iron mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
179.	PUMPKIN flowers	89.1	2.2	0.8	1.4	0.7	5.8	39	120	60	—
180.	RIDGE GOURD	95.2	0.5	0.1	0.3	0.5	3.4	17	18	26	0.39
181.	SNAKE GOURD	94.6	0.5	0.3	0.5	0.8	3.3	18	26	20	1.51
182.	SUNDAKAI, dry	12.3	8.3	1.7	5.1	17.6	55.0	269	390	180	22.2
183.	SWORD BEANS	87.2	2.7	0.2	0.6	1.5	7.8	44	60	40	2.0
184.	TINDA, tender	93.5	1.4	0.2	0.5	1.0	3.4	21	25	24	0.9
185.	TOMATO, green	93.1	1.9	0.1	0.6	0.7	3.6	23	20	36	1.8
186.	VEGETABLE MARROW	94.8	0.5	0.1	0.3	0.8	3.5	17	10	30	0.6
187.	WATER CHESTNUT, fresh	70.0	4.7	0.3	1.1	0.6	23.3	115	20	150	1.35
188.	WATER CHESTNUT, dry	13.8	13.4	0.8	3.1	—	68.9	330	70	440	2.4
NUTS AND OILSEEDS											
189.	ALMOND	5.2	20.8	58.9	2.9	1.7	10.5	655	230	490	5.09
190.	ARECANUT	31.3	4.9	4.4	1.0	11.2	47.2	249	50	130	1.5
191.	AVOCADOPEAR (nut)	63.7	2.5	0.7	1.1	—	32.0	144	20	80	1.2
192.	CASHEWNUT	5.9	21.2	46.9	2.4	1.3	22.3	596	50	450	5.81
193.	CHILGOZA	4.0	13.9	49.3	2.8	1.0	29.0	615	91	494	3.6
194.	COCONUT dry	4.3	6.8	62.3	1.6	6.6	18.4	662	400	210	7.8
195.	COCONUT fresh	36.3	4.5	41.6	1.0	3.6	13.0	444	10	240	1.7
196.	COCONUT tender	90.8	0.9	1.4	0.6	—	6.3	41	10	30	0.9
197.	COCONUT milk	42.8	3.4	41.0	0.9	0	11.9	430	15	140	1.6
198.	COCONUT water	93.8	1.4	0.1	0.3	0	4.4	24	24	10	0.1
199.	COCONUT meal, deoiled	8.7	23.8	2.8	7.0	9.8	47.9	312	112	646	69.4
200.	GARDEN CRESS SEEDS	3.2	25.3	24.5	6.4	7.6	33.0	454	377	723	100.0
201.	GINGELLY SEEDS	5.3	18.3	43.3	5.2	2.9	25.0	563	1450	570	9.3
202.	GROUNDNUT	3.0	25.3	40.1	2.4	3.1	26.1	567	90	350	2.5
203.	GROUNDNUT roasted	1.7	26.2	39.8	2.5	3.1	26.7	570	77	370	3.1
204.	GROUNDNUT cake	7.2	40.9	7.4	2.5	3.2	38.8	386	213	548	—
205.	LINSEED SEEDS	6.5	20.3	37.1	2.4	4.8	28.9	530	170	370	2.7
206.	MUSTARD SEEDS	8.5	20.0	39.7	4.2	1.8	23.8	541	490	700	7.9
207.	NIGER SEEDS	4.2	23.9	39.0	4.9	10.9	17.1	515	300	224	56.7
208.	PISTACHIO NUT	5.6	19.8	53.5	2.8	2.1	16.2	626	140	430	7.7
209.	PIYAL SEEDS	3.0	19.0	59.1	3.0	3.8	12.1	656	279	528	8.5
210.	SAFFLOWER SEEDS	5.5	13.5	25.6	2.6	34.9	17.9	356	236	823	4.6
211.	SUNFLOWER SEEDS	5.5	19.8	52.1	3.7	1.0	17.9	620	280	670	5.0
212.	WALNUT	4.5	15.6	64.5	1.8	2.6	11.0	687	100	380	2.64
213.	WATER MELON SEEDS (kernal)	4.3	34.1	52.6	3.7	0.8	4.5	628	100	937	7.4

Sl. No.	Name of the foodstuff	Mois- ture g.	Protein (Nx6.25) g.	Fat g.	Min- erals g.	Fibre g.	Carbo hydrates	Energy Kcal.	Calcium mg.	Phos- phorus mg.	Iron mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
CONDIMENTS AND SPICES											
214. ARISITHIPPILI		12.5	13.2	4.7	6.0	5.2	58.4	329	460	325	13.50
215. ASAFOETIDA		16.0	4.0	1.1	7.0	4.1	67.8	297	690	50	39.4
216. CARDAMOM		20.0	10.2	2.2	5.4	20.1	42.1	229	130	160	4.6
217. CHILLIES dry		10.0	15.9	6.2	6.1	30.2	31.6	246	160	370	2.3
218. CHILLIES green		85.7	2.9	0.6	1.0	6.8	3.0	29	30	80	4.4
219. CLOVES dry		25.2	5.2	8.9	5.2	9.5	46.0	286	740	100	11.7
220. CLOVES green		65.5	2.3	5.9	2.2	—	24.1	159	310	40	2.1
221. CORIANDER		11.2	14.1	16.1	4.4	32.6	21.6	288	630	393	7.1
222. CUMIN SEEDS		11.9	18.7	15.0	5.8	12.0	36.6	356	1080	511	11.7
223. FENUGREEK SEEDS		13.7	26.2	5.8	3.0	7.2	44.1	333	160	370	6.5
224. GARLIC dry		62.0	6.3	0.1	1.0	0.8	29.8	145	30	310	1.2
225. GINGER fresh		80.9	2.3	0.9	1.2	2.4	12.3	67	20	60	3.5
226. LIME PEEL		66.5	1.8	0.5	1.8	—	29.4	129	710	60	2.7
227. MACE		15.9	6.5	24.4	1.6	3.8	47.8	437	180	100	12.3
228. MANGO POWDER		6.8	2.8	7.8	4.9	13.7	64.0	337	180	16	45.2
229. NUTMEG fruit		14.3	7.5	36.4	1.7	11.6	28.5	472	120	240	2.03
230. NUTMEG rind		86.8	1.0	0.4	0.6	—	11.2	52	40	10	2.0
231. OMUM		7.4	17.1	21.8	7.9	21.2	24.6	363	1525	443	12.5
232. PEPPER DRY (black)		18.2	11.5	6.8	4.4	14.9	49.2	304	460	198	12.4
233. PEPPER GREEN		70.6	4.8	2.7	1.8	6.4	13.7	98	270	70	2.4
234. PIPPALI		12.2	6.4	2.3	4.8	8.5	65.8	310	1230	190	62.1
235. POPPY SEEDS		4.3	21.7	19.3	9.9	8.0	36.8	408	1584	432	15.9
236. TAMARIND PULP		20.9	3.1	0.1	2.9	5.6	67.4	283	170	110	17.0
237. TURMERIC		13.1	6.3	5.1	3.5	2.6	69.4	349	150	282	67.8
FRUITS											
238. AMBADA		90.3	0.7	3.0	0.5	1.0	4.5	48	36	11	3.9
239. AMLA		81.8	0.5	0.1	0.5	3.4	13.7	58	50	20	1.2
240. APPLE		84.6	0.2	0.5	0.3	1.0	13.4	59	10	14	0.660
241. APRICOT fresh		85.3	1.0	0.3	0.7	1.1	11.6	53	20	25	2.2
242. APRICOT dry		19.4	1.6	0.7	2.8	2.1	73.4	306	110	70	4.6
243. AVOCADO PEAR		73.6	1.7	22.8	1.1	—	0.8	215	10	80	0.7
244. BAEL FRUIT		61.5	1.8	0.3	1.7	2.9	31.8	137	85	50	0.6
245. BANANA, ripe		70.1	1.2	0.3	0.8	0.4	27.2	116	17	36	0.36
246. BANYAN TREE FIGS		74.1	1.7	2.0	1.9	8.5	11.8	72	364	43	—
247. BILIMBI		94.4	0.5	0.3	0.3	1.0	3.5	19	15	10	1.2
248. BREAD FRUIT		79.5	1.5	0.2	0.9	2.1	15.8	71	40	30	0.5
249. BULLOCK'S HEART		76.8	1.4	0.2	0.7	5.2	15.7	70	10	10	0.6
250. CAPE GOOSEBERRY		82.9	1.8	0.2	0.8	3.2	11.1	53	10	67	2.0
251. CASHEW FRUIT		86.3	0.2	0.1	0.2	0.9	12.3	51	10	10	0.2
252. CHERRIES, red		83.4	1.1	0.5	0.8	0.4	13.8	64	24	25	0.57
253. Currants, black		18.4	2.7	0.5	2.2	1.0	75.2	316	130	110	8.5
254. DATES dried		15.3	2.5	0.4	2.1	3.9	75.8	317	120	50	7.3
255. DATES fresh		59.2	1.2	0.4	1.7	3.7	33.8	144	22	38	0.96

Sl. No.	Name of the foodstuff	Mois- ture g.	Protein (Nx6.25) g.	Fat g.	Min- erals g.	Fibre g.	Carbo- hydrates g.	Energy Kcal.	Calcium mg.	Phos- phorus mg.	Iron mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
256.	FIGS (Ficus carcia)	88.1	1.3	0.2	0.6	2.2	7.6	37	80	30	1.0
257.	GRAPES blue variety	82.2	0.6	0.4	0.9	2.8	13.1	58	20	23	0.5
258.	GRAPES pale green variety	79.2	0.5	0.3	0.6	2.9	16.5	71	20	30	0.52
259.	GRAPE FRUIT marsh's seedless	88.5	1.0	0.1	0.4	—	10.0	45	30	30	0.2
260.	GRAPE FRUIT triumph	92.0	0.7	0.1	0.2	—	7.0	32	20	20	0.2
261.	GUAVA, country	81.7	0.9	0.3	0.7	5.2	11.2	51	10	28	0.27
262.	GUAVA, hill	85.3	0.1	0.2	0.6	4.8	9.0	38	50	20	1.2
263.	HARFAROWRIE	91.2	0.7	0.6	0.5	1.1	5.9	32	6	6	—
264.	JACK FRUIT	76.2	1.9	0.1	0.9	1.1	19.8	88	20	41	0.56
265.	JAMB, safed	93.5	0.1	0.4	0.1	2.2	3.7	19	17	3	0.1
266.	JAMBU FRUIT	83.7	0.7	0.3	0.4	0.9	14.0	62	15	15	0.43
267.	KORUKKAPALLI	79.2	2.7	0.4	0.7	1.0	16.0	78	14	49	1.0
268.	LAKUCH	82.1	0.7	1.1	0.8	2.0	13.3	66	50	20	0.5
269.	LEMON	85.0	1.0	0.9	0.3	1.7	11.1	57	70	10	0.26
270.	LEMON SWEET	90.5	0.7	0.3	0.5	0.7	7.3	35	30	20	0.7
271.	LICHI	84.1	1.1	0.2	0.5	0.5	13.6	61	10	35	0.7
272.	LICHIES, bastard	83.9	1.4	0.3	0.8	0.5	13.1	61	15	35	—
273.	LIME	84.6	1.5	1.0	0.7	1.3	10.9	59	90	20	0.3
274.	LIME, sweet malta	90.3	0.7	0.2	0.4	0.6	7.8	36	30	20	1.0
275.	LIME, sweet musambi	88.4	0.8	0.3	0.7	0.5	9.3	43	40	30	0.7
276.	LOQUAT	88.2	0.6	0.3	0.5	0.8	9.6	43	30	20	1.3
277.	MAHUA, ripe	73.6	1.4	1.6	0.7	—	22.7	111	45	22	0.23
278.	MANGO, ripe	81.0	0.6	0.4	0.4	0.7	16.9	74	14	16	1.3
279.	MANGOSTEEN	84.9	0.5	0.1	0.2	—	14.3	60	10	20	0.2
280.	MELON, musk	95.2	0.3	0.2	0.4	0.4	3.5	17	32	14	1.4
281.	MELON, water	95.8	0.2	0.2	0.3	0.2	3.3	16	11	12	7.9
282.	MULBERRY	86.5	1.1	0.4	0.6	1.1	10.3	49	70	30	2.3
283.	ORANGE	87.6	0.7	0.2	0.3	0.3	10.9	48	26	20	0.32
284.	ORANGE juice	97.7	0.2	0.1	0.1	—	1.9	9	5	9	0.7
285.	PALMYRA FRUIT ripe (mesocarp)	77.2	0.7	0.2	0.7	0.5	20.7	87	9	33	—
286.	PALMYRA FRUIT tender	92.3	0.6	0.1	0.2	0.3	6.5	29	10	20	0.5
287.	PAPAYA, ripe	90.8	0.6	0.1	0.5	0.8	7.2	32	17	13	0.5
288.	PASSION FRUIT	76.3	0.9	0.1	0.7	9.6	12.4	54	10	60	2.0
289.	PASSION FRUIT juice	89.0	1.2	0.2	0.7	1.2	7.7	37	10	30	0.7
290.	PEACHES	86.0	1.2	0.3	0.8	1.2	10.5	50	15	41	2.4
291.	PEARS	86.0	0.6	0.2	0.3	1.0	11.9	52	8	15	0.5
292.	PERSIMMON	80.0	0.7	0.2	0.3	0.9	17.9	76	15	10	0.3
293.	PHALSA	80.8	1.3	0.9	1.1	1.2	14.7	72	129	39	3.1

Sl. No.	Name of the foodstuff	Mois- ture g.	Protein (Nx6.25) g.	Fat g.	Min- erals g.	Fibre g.	Carbo- hydrates g.	Energy Kcal.	Calcium mg.	Phos- phorus mg.	Iron mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
294.	PINE APPLE	87.8	0.4	0.1	0.4	0.5	10.8	46	20	9	2.42
295.	PLUM	86.9	0.7	0.5	0.4	0.4	11.1	52	10	12	0.6
296.	POMEGRANATE	78.0	1.6	0.1	0.7	5.1	14.5	65	10	70	1.79
297.	PRUNES	85.3	0.5	0.3	0.6	0.5	12.8	56	10	18	—
298.	PUMMELO	88.0	0.6	0.1	0.5	0.6	10.2	44	30	30	0.3
299.	QUINCE	85.7	0.3	0.1	0.3	1.7	11.9	50	10	20	0.4
300.	RAISINS	20.2	1.8	0.3	2.0	1.1	74.6	308	87	80	7.7
301.	RASPBERRY	84.8	1.0	0.6	0.9	1.0	11.7	56	40	110	2.3
302.	ROSE APPLE	89.1	0.7	0.2	0.3	1.2	8.5	39	10	30	0.5
303.	SAPOTA	73.7	0.7	1.1	0.5	2.6	21.4	98	28	27	1.25
304.	SEETHAPHAL	70.5	1.6	0.4	0.9	3.1	23.5	104	17	47	4.31
305.	STRAWBERRY	87.8	0.7	0.2	0.4	1.1	9.8	44	30	30	1.8
306.	TOMATO, ripe	94.0	0.9	0.2	0.5	0.8	3.6	20	48	20	0.64
307.	TOMATILLO	91.7	0.7	0.6	0.6	0.6	5.8	31	7	40	1.4
308.	TREE TOMATO	86.2	1.5	0.2	1.2	4.2	6.7	35	12	46	1.0
309.	WOOD APPLE	64.2	7.1	3.7	1.9	5.0	18.1	134	130	110	0.48
310.	ZIZYPHUS	81.6	0.8	0.3	0.3	—	17.0	74	4	9	0.50

FISHES AND OTHER SEA FOODS

311.	AIR	78.1	15.9	1.3	1.2	—	3.5	89	380	180	0.7
312.	ANCHOVY	69.3	19.3	9.6	1.6	—	0.2	164	143	174	1.5
313.	BACHA	68.8	18.1	5.6	1.4	—	6.1	147	520	180	0.7
314.	BAM	74.8	16.1	0.9	1.3	—	6.9	100	330	240	0.8
315.	BASPATA MACHLI	76.1	18.2	4.4	1.4	—	0	112	175	225	—
316.	BATA, small varieties	79.0	14.3	2.5	2.0	—	2.2	89	790	200	1.1
317.	BELEY	79.7	14.5	0.6	2.3	—	2.9	75	370	330	1.0
318.	BHAGON fresh	70.6	14.8	8.8	2.0	—	3.8	154	182	190	1.2
319.	BHAGON dried	17.9	61.5	2.3	16.5	—	1.8	274	6235	207	9.3
320.	BHANGAN BATA	67.3	19.4	4.4	2.2	—	6.7	144	580	310	1.1
321.	BHEKTI fresh	79.9	14.9	0.8	1.4	—	3.0	79	480	350	3.1
322.	BHEKTI dried	20.1	60.2	2.0	15.9	—	1.8	266	939	347	15.0
323.	BHOLA	78.1	15.2	1.1	1.9	—	3.7	86	550	580	0.4
324.	BIG JAWED JUMPER	73.3	19.4	5.8	1.4	—	0.1	130	214	306	3.4
325.	BOAL	73.3	15.4	2.7	1.3	—	7.6	116	160	490	0.6
326.	BOMBAY DUCK, dried	16.7	61.7	4.0	15.1	—	2.5	293	1389	240	19.1
327.	BLUE MUSSEL	81.5	9.9	2.0	3.0	—	3.6	72	1134	286	8.0
328.	CAT FISH	77.1	21.4	—	—	—	—	86	10	230	—
329.	CHELA	77.5	14.6	4.3	2.1	—	1.5	103	590	340	2.0
330.	CHELA dried	4.7	64.8	17.0	13.4	—	0.1	413	3590	2342	—
331.	CHINGRI small dried	17.9	62.4	3.9	13.9	—	1.9	292	3539	354	27.9
332.	CHINGRI goda, dried	14.9	60.0	3.2	17.3	—	4.6	287	3847	828	49.6
333.	CHITAL	75.0	18.6	2.3	1.0	—	3.1	108	180	250	3.0
334.	CRAB muscle	83.5	8.9	1.1	3.2	—	3.3	59	1370	150	21.2
335.	CRAB small	65.3	11.2	9.8	4.6	—	9.1	169	1606	253	—

Sl. No.	Name of the foodstuff	Mois-	Protein	Fat	Miner-	Fibre	Carbo	Energy	Calcium	Phos-	Iron
		ture g.	(Nx6.25) g.	g.	als g.	g.	hydrates g.	Kcal.	mg.	phorus mg.	mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
336.	FOLUI	73.0	19.0	1.0	2.5	—	3.7	109	590	450	1.7
337.	GHOL	69.7	18.4	0.9	—	—	—	82	90	150	2.1
338.	GOGGLER	76.9	18.7	1.6	1.8	—	1.0	93	437	349	8.2
339.	HERRING, Indian	72.8	20.3	3.2	1.5	—	2.2	119	429	305	9.3
340.	HERRING ox-eyed	73.7	20.7	2.2	1.6	—	0.8	106	429	131	6.3
341.	HILSA	53.7	21.8	19.4	2.2	—	2.9	273	180	280	2.1
342.	HORSE MACKEREL	76.9	21.2	1.6	1.3	—	0	99	357	262	2.0
343.	INDIAN WHITING	77.1	19.2	0.6	1.5	—	1.6	89	71	262	2.2
344.	JEW FISH (kora)	78.3	18.8	0.8	1.9	—	0.2	83	286	305	4.4
345.	JEW FISH (pallikora)	77.0	20.0	2.2	1.6	—	—	100	214	262	4.8
346.	KALABASU	81.0	14.7	1.0	1.3	—	2.0	76	320	380	0.8
347.	KATLA	73.7	19.5	2.4	1.5	—	2.9	111	530	235	0.9
348.	KHORSULA	75.3	16.3	5.1	1.8	—	1.5	117	410	160	0.6
349.	KHOYRA fresh	72.0	18.0	3.0	1.8	—	5.2	120	590	220	0.7
350.	KHOYRA dried	17.3	58.9	6.2	16.4	—	1.2	296	—	—	—
351.	KOI	70.0	14.8	8.8	2.0	—	4.4	156	410	390	1.4
352.	KOOCHA MACHLI	76.7	18.7	0.8	1.4	—	2.4	92	185	119	—
353.	LATA	74.0	19.4	0.6	2.6	—	3.4	97	610	530	1.3
354.	LOBSTER	77.3	20.5	0.9	1.4	—	0	90	16	279	—
355.	MACKEREL	77.3	18.9	1.7	1.6	—	0.5	93	429	305	4.5
356.	MAGUR	78.5	15.0	1.0	1.3	—	4.2	86	210	290	0.7
357.	MAHASOLE	70.3	25.2	2.3	1.2	—	1.0	126	130	280	3.8
358.	MANDELI, dried	31.1	52.5	5.4	—	—	—	259	143	259	11.9
359.	MRIGAL	75.0	19.5	0.8	1.5	—	3.2	98	350	280	1.1
360.	MULLET	69.9	19.1	7.8	1.1	—	2.1	155	357	175	4.4
361.	MUSHI dried	9.6	67.0	4.9	—	—	—	312	541	507	2.7
362.	MUSSEL, fresh water	79.5	14.5	1.6	2.3	—	2.1	81	592	406	—
363.	MUTIJELLA, dried	19.2	63.6	2.4	11.8	—	3.0	288	7240	834	1.0
364.	OIL SARDINE	76.5	19.6	2.0	1.8	—	0.1	97	357	349	6.1
365.	PABDA	73.0	19.2	2.1	1.1	—	4.6	114	310	210	1.3
366.	PANGAS	72.3	14.2	10.8	1.0	—	1.7	161	180	130	0.5
367.	PARSEY fresh	70.8	17.5	5.9	1.5	—	4.3	140	850	490	2.7
368.	PARSEY dried	11.8	65.0	4.4	15.8	—	3.0	312	2231	396	17.4
369.	POMFRETS, black	74.5	20.3	2.6	1.1	—	1.5	111	286	306	2.3
370.	POMFRETS, white	78.4	17.0	1.3	1.5	—	1.8	87	200	290	0.9
371.	PRAWN	77.4	19.1	1.0	1.7	—	0.8	89	323	278	5.3
372.	PUTI	75.0	18.1	2.4	1.4	—	3.1	106	110	96	1.0
373.	RAVAS	71.4	22.2	1.1	2.0	—	3.3	112	405	335	2.0
374.	RAY	75.3	20.9	0.5	1.2	—	2.1	97	214	262	5.3
375.	RIBBON FISH fresh	76.6	18.1	3.2	1.5	—	0.6	104	214	218	13.9
376.	RIBBON FISH dried	6.7	76.1	8.7	—	—	—	383	739	700	4.2
377.	ROHU	76.7	16.6	1.4	0.9	—	4.4	97	650	175	1.0
378.	SARDINE	78.1	21.0	1.9	1.7	—	—	101	90	360	2.5
379.	SARPUTI	70.2	16.5	9.5	1.5	—	2.3	161	220	120	0.5
380.	SHARK	76.0	21.6	0.4	1.2	—	0.8	93	357	262	1.4

Sl. No.	Name of the foodstuff	Mois- ture g.	Protein (Nx6.25) g.	Fat g.	Mine- rals g.	Fibre g.	Carbo- hydrates g.	Energy Kcal.	Calcium mg.	Phos- phorus mg.	Iron mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
381.	SHRIMP (small, dried)	6.0	68.1	8.5	17.4	—	—	349	4384	1160	—
382.	SEER	72.7	22.5	4.0	1.5	—	—	126	71	572	5.4
383.	SILVER BELLY	76.4	19.2	1.6	3.2	—	0	91	715	741	2.2
384.	SINGHALA	61.0	20.9	3.1	1.1	—	13.9	167	98	152	1.8
385.	SINGHI	68.0	22.8	0.6	1.7	—	6.9	124	670	650	2.3
386.	SOLE	78.0	16.2	2.3	1.3	—	2.2	94	140	95	0.5
387.	SOLE (malahar)	78.0	19.5	4.7	3.1	—	—	120	1072	524	0.5
388.	SURMAI fresh	63.0	19.9	1.4	—	—	—	92	92	161	2.0
389.	SURMAI dried	43.3	38.6	6.2	—	—	—	210	148	172	4.4
390.	TAPRA (dried)	12.6	62.3	9.0	15.1	—	1.0	334	771	552	19.3
391.	TAPSI (dried)	16.2	58.5	12.1	17.2	—	—	343	1597	595	41.2
392.	TARTOOR	78.3	18.2	0.2	2.1	—	1.2	79	1072	218	4.9
393.	TENGRA fresh	70.0	19.2	6.4	2.1	—	2.3	144	270	170	2.0
394.	TENGRA dried	13.8	54.9	3.9	27.5	—	—	255	843	400	—
395.	TUNNY	71.9	23.8	1.6	1.8	—	0.9	113	429	349	6.8
396.	WHITE BAIT	79.1	14.5	1.4	2.5	—	2.5	81	643	437	3.8
MEAT AND POULTRY											
397.	BEEF meal	8.2	79.2	10.3	1.6	0.5	0.2	410	68	324	18.8
398.	BEEF muscle	74.3	22.6	2.6	1.0	—	—	114	10	190	0.8
399.	BUFFALO MEAT	78.7	19.4	0.9	1.0	—	—	86	3	189	—
400.	DUCK	72.3	21.6	4.8	1.2	—	0.1	130	4	235	—
401.	EGG, duck	71.0	13.5	13.7	1.0	—	0.8	181	70	260	2.5
402.	EGG, hen	73.7	13.3	13.3	1.0	—	—	173	60	220	2.1
403.	EGG, turtle	76.0	12.2	6.7	1.5	—	3.6	124	93	299	—
404.	FINCH	68.8	26.6	3.0	1.7	—	—	133	90	347	—
405.	FOWL	72.2	25.9	0.6	1.3	—	—	109	25	245	—
406.	GOAT MEAT (lean)	74.2	21.4	3.6	1.1	—	—	118	12	193	—
407.	GREY QUAIL	75.0	21.9	1.7	1.4	—	—	103	22	282	—
408.	LIVER GOAT	76.3	20.0	3.0	1.3	—	—	107	17	279	—
409.	LIVER SHEEP	70.4	19.3	7.5	1.5	—	1.3	150	10	380	6.3
410.	MUTTON, muscle	71.5	18.5	13.3	1.3	—	—	194	150	150	2.5
411.	PIGEON	70.4	23.3	4.9	1.4	—	—	137	12	290	—
412.	PORK, muscle	77.4	18.7	4.4	1.0	—	—	114	30	200	2.2
413.	RUFF AND REEVE	70.3	25.9	2.3	1.5	—	—	124	3	321	—
414.	SNAIL, small	78.9	12.6	1.0	3.8	—	3.7	74	1321	147	—
415.	SNAIL, big	74.1	10.5	0.6	2.4	—	12.4	97	870	116	—
416.	TURTLE'S MEAT	79.4	16.5	1.5	1.1	—	1.5	86	7	162	—
417.	VENISON	75.3	21.0	0.6	1.2	—	1.9	97	3	233	—
MILK AND MILK PRODUCTS											
418.	MILK ass's	89.9	2.1	1.5	—	—	6.5	48	80	—	—
419.	MILK buffalo's	81.0	4.3	6.5	0.8	—	5.0	117	210	130	0.2
420.	MILK cow's	87.5	3.2	4.1	0.8	—	4.4	67	120	90	0.2
421.	MILK goat's	86.8	3.3	4.5	0.8	—	4.6	72	170	120	0.3
422.	MILK human	88.0	1.1	3.4	0.1	—	7.4	65	28	11	—
423.	CURDS (cow's milk)	89.1	3.1	4.0	0.8	—	3.0	60	149	93	0.2

Sl. No.	Name of the foodstuff	Mois- ture g.	Protein (Nx6.25) g.	Fat g.	Min- erals g.	Fibre g.	Carbo- hydrates g.	Energy Kcal.	Calcium mg.	Phos- phorus mg.	Iron mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
424.	BUTTER MILK	97.5	0.8	1.1	0.1	—	0.5	15	30	30	0.1
425.	SKIMMED MILK, liquid	92.1	2.5	0.1	0.7	—	4.6	29	120	90	0.2
426.	CHANNA, cow's milk	57.1	18.3	20.8	2.6	—	1.2	265	208	138	—
427.	CHANNA, buffalo's milk	54.1	13.4	23.0	1.6	—	7.9	292	480	277	—
428.	CHEESE	40.3	24.1	25.1	4.2	—	6.3	348	790	520	2.1
429.	KHOA (whole buffalo milk)	30.6	14.6	31.2	3.1	—	20.5	421	650	420	5.8
430.	KHOA (skimmed buffalo milk)	46.1	22.3	1.6	4.3	—	25.7	206	990	650	2.7
431.	KHOA (whole cow milk)	25.2	20.0	25.9	4.0	—	24.9	413	956	613	—
432.	SKIMMED MILK POWDER (cow's milk)	4.1	38.0	0.1	6.8	—	51.0	357	1370	1000	1.4
433.	WHOLE MILK POWDER (cow's milk)	3.5	25.8	26.7	6.0	—	38.0	496	950	730	0.6
FATS AND EDIBLE OILS											
434.	BUTTER	19.0	—	81.0	2.5	—	—	729	—	—	—
435.	GHEE (cow)	—	—	100.0	—	—	—	900	—	—	—
436.	GHEE (buffalo)	—	—	100.0	—	—	—	900	—	—	—
437.	HYDROGENATED OIL (fortified)	—	—	100.0	—	—	—	900	—	—	—
438.	COOKING OIL (Groundnut, Gingelly, Palmolein, Mustard, Coconut, etc.)	—	—	100.0	—	—	—	900	—	—	—
SUGARS											
439.	SUGAR CANE	0.4	0.1	0	0.1	—	99.4	398	12	1	0.155
440.	HONEY	20.6	0.3	0	0.2	—	79.5	319	5	16	0.696
441.	JAGGERY (cane)	3.9	0.4	0.1	0.6	—	95.0	383	80	40	2.64
442.	JAGGERY (coconut palm)	10.3	1.0	0.2	5.0	—	83.5	340	1638	62	—
443.	JAGGERY (date palm)	9.6	1.5	0.3	2.6	—	86.1	353	363	62	—
444.	JAGGERY (fan palm)	8.6	1.0	0.1	1.8	—	98.5	359	225	44	—
445.	JAGGERY (sago palm)	9.2	2.3	0.1	3.7	—	84.7	349	1252	372	—
446.	SAGO	12.2	0.2	0.2	0.3	—	87.1	351	10	10	1.3
BEVERAGES (Alcoholic)											
447.	PACHWAI (Assam)	88.2	3.0	1.8	0.6	0.6	5.8	51	12	100	4.5
448.	TODDY, fermented	97.6	0.1	0.3	0.2	—	1.8	38	—	—	—
449.	TODDY, sweet	84.7	0.1	0.3	0.7	—	14.3	59	150	10	0.3
BEVERAGES (Non-Alcoholic)											
450.	NEERA	—	0.4	—	0.5	—	10.9	45	0	140	0.1
451.	SUGAR CANE JUICE	90.2	0.1	0.2	0.4	—	9.1	39	10	10	0.1

TABLE-2
VITAMIN CONTENT: COMMON FOODS
All the values are per 100 gms. of edible portion.

Sl. No.	Name of the foodstuff	Caro-	Thia-	Ribofla-	Niacin	Total	Folic Acid (ug)		Vitamin	Choline
		tene ug.	mine mg.	vin mg.	mg.	B6 mg.	Free	Total	C mg.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
CEREAL GRAINS AND PRODUCTS										
1.	BAJRA	132	0.33	0.25	2.3	—	14.7	45.5	0	—
2.	BARLEY	10	0.47	0.20	5.4	—	—	—	0	—
3.	ITALIAN MILLET	32	0.59	0.11	3.2	—	4.2	15.0	0	—
4.	JOWAR	47	0.37	0.13	3.1 (0.21)	14.0	20.0	0	—	—
5.	MAIZE, dry	90	0.42	0.10	1.8	—	14.0	20.0	0	—
6.	MAIZE, tender	32	0.11	0.17	0.6	—	—	—	6	—
7.	PANIVARAGU	0	0.20	0.18	2.3	—	—	—	0	748
8.	RAGI	42	0.42	0.19	1.1	—	5.2	18.3	0	—
9.	RICE, parboiled, hand pounded	9	0.27	0.12	4.0	—	—	—	0	—
10.	RICE, parboiled, milled	—	0.21	0.05	3.8 (0.24)	8.9	11.0	0	—	—
11.	RICE, raw, hand pounded	2	0.21	0.16	3.9	—	—	—	0	77
12.	RICE, raw, milled	0	0.06	0.06	1.9	—	4.1	8.0	0	—
13.	RICE, bran	—	2.70	0.48	(29.8)	—	—	—	0	—
14.	RICE, flakes	0	0.21	0.05	4.0	—	—	—	0	—
15.	RICE, puffed	0	0.21	0.01	4.1	—	—	—	0	—
16.	SAMAI	0	0.30	0.09	3.2	—	2.2	9.0	0	—
17.	SANWA MILLET	0	(0.33)	(0.10)	4.2	—	—	—	0	—
18.	VARAGU	0	0.33	0.09	2.0	—	7.4	23.1	0	—
19.	WHEAT, bulgar	—	(0.74)	0.11	4.8	—	—	—	0	206
20.	WHEAT, whole	64	0.45	0.17	5.5 (0.57)	142	36.6	0	—	—
21.	WHEAT, flour (whole)	29	0.49	0.17	4.3	—	12.1	35.8	0	—
22.	WHEAT, flour (refined)	25	0.12	0.07	2.4	—	—	—	0	—
23.	WHEAT, germ	—	1.40	0.54	2.9	—	—	—	0	—
24.	WHEAT, semolina	—	0.12	0.03	1.6	—	—	—	0	—
25.	WHEAT, vermicelli	0	0.19	0.05	1.8	—	—	—	0	—
26.	WHEAT, bread, (brown)	—	0.21	—	2.5	—	—	—	—	—
27.	WHEAT, bread, (white)	—	0.07	—	0.7	—	—	—	—	—
PULSES AND LEGUMES										
28.	BENGAL GRAM, whole	189	0.30	0.15	2.9	—	34.0	186.0	3	194
29.	BENGAL GRAM, dhal	129	0.48	0.18	2.4	—	32.0	147.5	1	—
30.	BENGAL GRAM, roasted	113	0.20	—	1.3	—	22.0	139.0	0	—
31.	BLACK GRAM, dhal	38	0.42	0.20	2.0	—	24.0	132.0	0	206
32.	COWPEA	12	0.51	0.20	1.3	—	69.0	133.0	0	202
33.	FIELD BEAN, dry	0	0.52	0.16	1.8	—	—	—	0	352
34.	GREEN GRAM, whole	94	0.47	0.27	2.1	—	—	—	0	167
35.	GREEN GRAM, dhal	49	0.47	0.21	2.4	—	24.5	140.0	0	—

Sl. No.	Name of the foodstuff	Caro- tene ug.	Thia- mine mg	Ribofla- vin mg.	Niacin mg.	Total B6 mg.	Folic Acid (ug)		Vitamin C mg.	Choline
							Free	Total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
36.	HORSE GRAM	71	0.42	0.20	1.5	—	—	—	1	—
37.	KHESARI, dhal	120	0.39	0.17	2.9	—	—	—	0	—
38.	LENTIL	270	0.45	0.20	2.6	—	14.5	36.0	0	299
39.	MOTH BEANS	9	0.45	0.09	1.5	—	—	—	2	—
40.	PEAS,	83	0.25	0.01	0.8	—	—	—	9	20
41.	PEAS, dry	39	0.47	0.19	3.4	—	4.6	7.5	0	235
42.	PEAS, roasted	18	0.47	0.21	3.5	—	—	—	0	—
44.	RED GRAM, dhal	132	0.45	0.19	2.9 (0.54)	19.0	103.0	0	183	
45.	RED GRAM, tender	469	0.32	0.33	3.0	—	—	—	25	72
46.	SOYABEAN	426	0.73	0.39	3.2	—	8.65	100.0	—	—
LEAFY VEGETABLES										
47.	AGATHI	5,400	0.21	0.09	1.2	—	—	—	169	—
49.	AMARANTH, tender gangeticus	5,520	0.03	0.30	1.2	—	41.0	149.0	99	31
50.	AMARANTH, stem gangeticus	255	0.01	0.18	0	—	—	—	10	—
51.	AMARANTH, paniculatus	14,190	0.01	0.24	1.1	—	—	—	81	—
53.	AMARANTH, spinosus	3,564	0	—	—	—	—	—	33	—
57.	AMARANTH, viridis	—	—	—	—	—	—	—	179	—
58.	AMBAT CHUKA	3,660	0.03	0.06	0.2	—	40.0	125.0	12	—
59.	BATHUA LEAVES	1,740	0.01	0.14	0.6	—	—	—	35	—
60.	BEET GREENS	5,862	0.26	0.56	3.3	—	—	—	70	—
62.	BETEL LEAVES	5,760	0.07	0.03	0.7	—	—	—	5	—
65.	BRUSSELS SPROUTS	126	0.05	0.16	0.4	—	—	—	72	—
66.	CABBAGE	120	0.06	0.09	0.4	—	13.3	23.0	124	120
67.	CARROT LEAVES	5,700	0.04	0.37	2.1	—	—	—	79	—
69.	CELERY LEAVES	3,990	0	0.11	1.2	—	—	—	62	—
70.	CELERY STALK	520	0.12	0.05	0.3	—	—	—	6	—
71.	CHEKKUR MANIS	5,706	0.48	0.32	2.6	—	—	—	247	—
72.	COLOCASIA LEAVES (black variety)	12,000	0.06	0.45	1.9	—	—	—	63	—
73.	COLOCASIA LEAVES (green variety)	10,278	0.22	0.26	1.1	—	—	—	12	—
75.	CORIANDER LEAVES	6,918	0.05	0.06	0.8	—	—	—	135	—
76.	COW PEA LEAVES	6,072	0.05	0.18	0.6	—	—	—	4	—
77.	CURRY LEAVES	7,560	0.08	0.21	2.3	—	23.5	93.9	4	—
78.	DRUMSTICK LEAVES	6,780	0.06	0.05	0.8	—	—	—	220	—
79.	FENUGREEK LEAVES	2,340	0.04	0.31	0.8	—	—	—	52	—
80.	FETID CASSIA, fresh	10,152	0.08	0.19	0.8	—	—	—	82	—
82.	GARDEN CRESS	—	0.15	—	—	—	—	—	—	—
84.	GOGU	2,898	0.07	0.39	1.1	—	—	—	20	—
86.	IPOMOEA LEAVES	1,980	0.05	0.13	0.6	—	—	—	37	—
87.	KNOL-KHOL GREENS	4,146	0.25	—	3	—	—	—	157	—
88.	KUPPAMENI	—	—	—	—	—	—	—	147	—

Sl. No.	Name of the foodstuff	Caro- tene ug.	Thia- mine mg.	Ribofla- vin mg.	Niacin mg.	Total B6 mg.	Folic Acid (ug)		Vitamin C mg.	Choline
							Free	Total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
89.	LETTUCE	990	0.09	0.13	0.50	—	—	—	10	178
92.	MANATHAKKALI LEAVES	—	—	0.59	0.90	—	—	—	11	—
93.	MAYALU	7,440	0.03	0.16	0.5	—	—	—	87	—
94.	MINT	1,620	0.05	0.26	1.0	—	9.7	114.0	27	—
96.	MUKARRATE KEERAI	—	—	—	—	—	—	—	27	—
97.	MUSTARD LEAVES	2,622	0.03	—	—	—	—	—	33	—
98.	NERRINGI	—	—	—	—	—	—	—	41	—
99.	PARSLEY	1,920	0.04	0.18	0.5	—	—	—	281	—
100.	PARUPPU KEERAI	2,292	0.10	0.22	0.7	—	—	—	29	—
101.	PONNANGANNI	1,926	0	0.14	1.2	—	—	—	17	—
103.	RADISH LEAVES	5,295	0.18	0.47	0.8	—	—	—	81	—
104.	TABLE RADISH LEAVES	5,742	0.18	0.35	5.5	—	—	—	106	—
106.	RAPE PLANT LEAVES	1,380	0.01	0.03	0.9	—	—	—	65	—
108.	SAFFLOWER LEAVES	3,540	0.04	0.10	0	—	—	—	15	—
109.	SHEPU	7,182	0.03	0.13	0.20	—	—	—	—	25
110.	SPINACH	5,580	0.03	0.26	0.5	—	51.0	123.0	28	—
113.	TAMARIND LEAVES, tender	250	0.24	0.17	4.1	—	—	—	3	—
114.	TURNIP GREENS	9,396	0.31	0.57	5.4	—	—	—	180	—

ROOTS & TUBERS

116.	BANANA RHIZOME	16	0	0.03	0.2	—	—	—	1	—
117.	BEET ROOT	0	0.04	0.09	0.4	—	—	—	10	242
118.	CARROT	1,890	0.04	0.02	0.6	—	5.0	15.0	3	168
119.	COLOCASIA	24	0.09	0.03	0.4	—	16.0	54.0	0	—
121.	MANGO GINGER	20	0.01	0.03	0	—	—	—	1	—
122.	ONION, big	0	0.08	0.01	0.4	—	1.5	6.0	11	—
123.	ONION, small	15	0.08	0.02	0.5	—	—	—	2	—
124.	PARSNIP	18	0.06	—	0.4	—	—	—	16	—
125.	POTATO	24	0.10	0.01	1.2	—	3.0	7.0	17	100
126.	RADISH, pink	3	0.06	0.02	0.4	—	—	—	17	—
128.	RADHISH, table	4	0.02	0.03	1.4	—	—	—	21	—
129.	RADISH, white	3	0.06	0.02	0.5	—	—	—	15	63
130.	SWEET POTATO	6	0.08	0.04	0.7	—	—	—	24	—
131.	TAPIOCA	—	0.05	0.10	0.3	—	—	—	25	—
132.	TAPIOCA, chips, dried	0	0.23	0.10	1.4	—	—	—	0	—
133.	TURNIP	0	0.04	0.04	0.5	—	—	—	43	137
134.	YAM, elephant	260	0.06	0.07	0.7	—	—	—	0	—
135.	YAM, ordinary	78	0.07	—	0.7	—	0.9	17.5	—	—
136.	YAM, wild	565	0.19	0.47	1.2	—	—	—	1	—

OTHER VEGETABLES

137.	ASH GUARD	0	0.06	0.01	0.4	—	—	—	1	—
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Sl. No.	Name of the foodstuff	Caro- tene ug.	Thia- mine mg.	Ribofla- vin mg.	Niacin mg.	Total B6 mg.	Folic Acid (ug)		Vitamin C mg.	Choline
							Free	Total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
138.	BEANS, scarlet runner	34	0.34	0.19	0	—	—	—	27	—
139.	BITTER GOURD	126	0.07	0.09	0.5	—	—	—	88	—
140.	BITTER GOURD, Small	126	0.07	0.06	0.4	—	—	—	96	—
141.	BOTTLE GOURD	0	0.03	0.01	0.2	—	—	—	0	—
142.	BRINJAL	74	0.04	0.11	0.9	—	5.0	34.0	12	52
143.	BROAD BEANS	9	0.08	—	0.8	—	—	—	12	5
144.	CAULIFLOWER	30	0.04	0.10	1.0	—	—	—	56	127
145.	CHO-CHO-MARROW	0	0	0.04	0.4	—	—	—	4	—
146.	CLUSTER BEANS	198	0.09	0.03	0.6	—	50.0	144.0	49	—
147.	COLOCASIA STEM	104	0.07	0.07	0.1	—	—	—	3	—
148.	COW PEA PODS	564	0.07	0.09	0.9	—	—	—	14	—
149.	CUCUMBER	0	0.03	0	0.2	—	12.6	14.7	7	—
150.	DOUBLE BEANS	—	—	—	—	—	—	—	22	—
151.	DRUM STICK	110	0.05	0.07	0.2	—	—	—	120	—
153.	FIELD BEANS, tender	187	0.10	0.06	0.7	—	—	—	9	4
155.	FRENCH BEANS	132	0.08	0.06	0.3	—	15.5	45.5	24	—
156.	GHOSALA	120	0.02	0.06	0.4	—	—	—	0	—
157.	GIANT CHILLIES (Capsicum)	427	0.55	0.05	0.1	—	—	—	137	—
158.	JACK, tender	0	0.05	0.04	0.2	—	—	—	14	—
159.	JACK, fruit seed	—	—	—	—	—	—	—	—	52
160.	KANKODA	1620	0.05	0.18	0.6	—	—	—	—	—
164.	KOVAI	156	0.07	0.08	0.7	—	18.0	59.0	15	—
165.	KNOL-KHOL	21	0.05	0.09	0.5	—	—	—	85	—
166.	LADIES FINGERS	52	0.07	0.10	0.6	—	25.3	105.1	13	—
168.	LEEKES	18	0.23	—	—	—	—	—	11	—
169.	LOTUS STEM, dry	0	0.82	1.21	1.9	—	—	—	3	—
170.	MANGO GREEN	90	0.04	0.01	0.2	—	—	—	3	—
171.	ONION STALKS	595	0	0.03	0.3	—	—	—	17	—
172.	PAPAYA GREEN	0	0.01	0.01	0.1	—	—	—	12	—
173.	PARWAR	153	0.05	0.06	0.5	—	—	—	29	—
174.	PINK BEANS	453	0.06	0.02	0.6	—	—	—	12	—
175.	PLANTAIN FLOWER	27	0.05	0.02	0.4	—	—	—	16	—
176.	PLANTAIN, green	30	0.05	0.02	0.3	—	1.6	16.4	24	—
177.	PLANTAIN, stem	0	0.02	0.01	0.2	—	—	—	7	—
178.	PUMPKIN	50	0.06	0.04	0.5	—	3.0	13.0	2	136
180.	RIDGE GOURD	33	—	0.01	0.2	—	—	—	5	—
181.	SNAKE GOURD	96	0.04	0.06	0.3	—	7.5	15.5	0	—
182.	SUNDAKAI, dry	450	—	—	—	—	—	—	0	—
183.	SWORD BEANS	24	0.08	0.08	0.5	—	—	—	12	—
184.	TINDA, tender	13	0.04	0.08	0.3	—	—	—	18	—
185.	TOMATO, green	192	0.07	0.01	0.4	—	—	—	31	—
186.	VEGETABLE MARROW	—	0.02	0	0.4	—	—	—	18	—
187.	WATER CHEST NUT, fresh	12	0.05	0.07	0.6	—	—	—	9	—

Sl. No.	Name of the foodstuff	Caro- tene ug.	Thia- mine mg.	Ribofla- vin mg.	Niacin mg.	Total B6 mg.	Folic Acid (ug)		Vitamin C mg.	Choline
							Free	Total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
NUTS AND OILSEEDS										
189. ALMOND		0	0.24	0.57	4.4	—	—	—	0	—
190. ARECANUT		3	—	—	—	—	—	—	—	—
192. CASHEWNUT		60	0.63	0.19	1.2	—	—	—	0	—
193. CHILGOZA		—	0.32	0.30	3.6	—	—	—	0	—
194. COCONUT, dry		0	0.08	0.01	3.0	—	15.3	16.5	7	—
195. COCONUT, fresh		0	0.05	0.10	0.8	—	11.7	12.5	1	—
197. COCONUT, milk		0	0.08	0.04	0.6	—	—	—	3	—
198. COCONUT, water		0	0.01	0	0.1	—	—	—	2	—
199. COCONUT, meal deoiled		0	0.13	0.57	6.0	—	—	—	5	—
200. GARDEN CRESS										
SEEDS		27	0.59	0.61	14.3	—	—	—	0	—
201. GINGELLY SEEDS		60	1.01	0.34	4.4	—	51.0	134.0	0	—
202. GROUNDNUT		37	0.90	0.13	19.9	—	16.0	20.0	0	224
203. GROUNDNUT, roasted		0	0.39	0.13	22.1	—	—	—	0	—
205. LINSEED		30	0.23	0.07	1.0	—	—	—	0	—
206. MUSTARD SEEDS		162	0.65	0.26	4.0	—	—	—	0	211
207. NIGER SEEDS		—	0.07	0.97	8.4	—	—	—	0	—
208. PISTACHIONUT		144	0.67	0.28	2.3	—	—	—	—	—
209. PIYAL SEEDS		0	0.69	0.53	1.5	—	—	—	5	—
211. SUNFLOWER SEEDS		0	0.86	0.20	4.5	—	—	—	1	—
212. WALNUT		6	0.45	0.40	1.0	—	—	—	0	—
CONDIMENTS & SPICES										
215. ASAFOETIDA		4	0	0.04	0.3	—	—	—	0	—
216. CARDAMOM		0	0.22	0.17	0.8	—	—	—	0	1550
217. CHILLIES, dry		345	0.93	0.43	9.5	—	—	—	50	—
218. CHILLIES, green		175	0.19	0.39	0.9	—	6.0	29.0	111	—
219. CLOVES, dry		253	0.08	0.13	0	—	—	—	0	—
220. CLOVES, green		72	—	—	—	—	—	—	—	—
221. CORIANDER		942	0.22	0.35	1.1	—	27.4	32.0	0	1077
222. CUMIN SEEDS		522	0.55	0.36	2.6	—	—	—	3	1065
223. FENUGREEK SEEDS		96	0.34	0.29	1.1	—	14.5	84.0	0	1161
224. GARLIC, dry		0	0.06	0.23	0.4	—	—	—	13	—
225. GINGER, fresh		40	0.06	0.03	0.6	—	—	—	6	—
227. MACE		3027	0.25	0.42	1.4	—	—	—	0	—
229. NUTMEG		0	0.33	0.01	1.4	—	—	—	0	—
231. OMUM		71	0.21	0.28	2.1	—	—	—	—	—
232. PEPPER, dry		1080	0.09	0.14	1.4	—	—	—	—	—
233. PEPPER, green		540	0.05	0.04	0.2	—	—	—	1	—
236. TAMARIND PULP		60	—	0.07	0.7	—	—	—	3	—
237. TURMERIC		30	0.03	0	2.3	—	10.0	18.0	0	—
FRUITS										
238. AMBADA		270	0.02	0.02	0.3	—	—	—	21	—
239. AMLA		9	0.03	0.01	0.2	—	—	—	600	256
240. APPLE		0	—	—	0	—	—	—	1	321

Sl. No.	Name of the foodstuff	Caro- tene ug.	Thia- mine mg.	Ribofla- vin mg.	Niacin mg.	Total B6 mg.	Folic Acid (ug)		Vitamin C mg.	Choline
							Free	Total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
241.	APRICOT, fresh	2160	0.04	0.13	0.6	—	—	—	6	—
242.	APRICOT, dried	58	0.22	—	2.3	—	—	—	2	—
244.	BAEL FRUIT	55	0.13	0.03	1.1	—	—	—	8	—
245.	BANANA RIPE	78	0.05	0.08	0.5	—	—	—	7	—
247.	BILIMBI	18	0.09	0.04	0.6	—	—	—	32	—
248.	BREAD FRUIT	9	0.04	0.07	—	—	—	—	21	—
249.	BULLOCK'S HEART	67	—	0.07	0.6	—	—	—	5	—
250.	CAPE GOOSEBERRY	1428	0.05	0.02	0.3	—	—	—	49	—
251.	CASHEW FRUIT	23	0.02	0.05	0.4	—	—	—	180	—
252.	CHERRIES, red	0	0.08	0.08	0.3	—	—	—	7	—
253.	CURRENTS, black	21	0.03	0.14	0.4	—	—	—	1	—
254.	DATES, dried	26	0.01	0.02	0.9	—	—	—	3	—
256.	FIGS (Ficus Carcia)	162	0.06	0.05	0.6	—	—	—	5	—
257.	GRAPES, blue variety	3	0.04	0.03	0.2	—	—	—	1	—
258.	GRAPES, pale green variety	0	—	—	0	—	—	—	1	—
259.	GRAPE FRUIT, Marsh's seedless	—	0.12	0.02	0.3	—	—	—	—	—
260.	GRAPE FRUIT, triumph	—	0.12	0.02	0.3	—	—	—	31	—
261.	GUAVA, country	0	0.03	0.03	0.4	—	—	—	212	—
262.	GUAVA, hill	0	0.02	0.02	0.3	—	—	—	15	—
264.	JACK FRUIT	175	0.03	0.13	0.4	—	—	—	7	—
265.	JAMB, safed	—	0.01	0.02	0.2	—	—	—	30	—
266.	JAMBU FRUIT	48	0.03	0.01	0.2	—	—	—	18	7
267.	KORUKKAPALLI	0	0.22	0.06	1.6	—	—	—	108	—
268.	LAKUCH	254	0.02	0.15	0.3	—	—	—	135	—
269.	LEMON	0	0.02	0.01	0.1	—	—	—	39	—
270.	LEMON SWEET	0	—	0.04	0	—	—	—	45	—
271.	LICHI	0	0.02	0.06	0.4	—	—	—	31	—
273.	LIME	15	0.02	0.03	0.1	—	—	—	63	—
274.	LIME, sweet, malta	0	—	—	0	—	—	—	54	—
275.	LIME, sweet, musambi	0	—	—	0	—	—	—	50	—
276.	LOQUAT	559	—	—	0	—	—	—	0	—
277.	MAHUA	307	—	—	—	—	—	—	40	—
278.	MANGO RIPE	2743	0.08	0.09	0.9	—	—	—	16	—
280.	MELON, musk	169	0.11	0.08	0.3	—	—	—	26	—
281.	MELON, water	0	0.02	0.04	0.1	—	—	—	1	—
282.	MULBERRY	57	0.04	0.13	0.5	—	—	—	12	—
283.	ORANGE	1104	—	—	—	—	—	—	30	—
284.	ORANGE JUICE	15	0.06	0.02	0.4	—	—	—	64	—
286.	PALMYRAFRUIT, tender	0	0.01	0.01	0.2	—	—	—	4	—
287.	PAPAYA, ripe	666	0.04	0.25	0.2	—	—	—	57	—

Sl. No.	Name of the foodstuff	Caro-	Thia-	Ribofla-	Niacin	Total	Folic Acid (ug)		Vitamin	Choline
		tene ug.	mine mg.	vin mg.	mg.	B6 mg.	Free	Total	C mg.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
288.	PASSION FRUIT	54	0.07	0.14	1.6	—	—	—	25	—
289.	PASSION FRUIT JUICE	1968	0.01	0.02	0	—	—	—	13	—
290.	PEACHES	0	0.02	0.03	0.5	—	—	—	6	—
291.	PEARS	28	0.06	0.03	0.2	—	—	—	0	—
292.	PERSIMMON	2268	0.03	0.01	0	—	—	—	33	—
293.	PHALSA	419	—	—	0.3	—	—	—	22	—
294.	PINE APPLE	18	0.20	0.12	0.1	—	—	—	39	8
295.	PLUM	166	0.04	0.1	0.3	—	—	—	5	—
296.	POMEGRANATE	0	0.06	0.10	0.3	—	—	—	16	—
298.	PUMMELO	120	0.03	0.03	0.2	—	—	—	20	—
299.	QUINCE	—	0.02	0.02	0.2	—	—	—	11	—
300.	RAISINS	2.4	0.07	0.19	0.7	—	—	—	1	—
301.	RASPBERRY	1248	—	—	0.8	—	—	—	30	—
302.	ROSE APPLE	141	0.01	0.05	0.4	—	—	—	3	—
303.	SAPOTA	97	0.02	0.03	0.2	—	—	—	6	—
304.	SEETHAPHAL	0	0.07	0.17	1.3	—	—	—	37	—
305.	STRAWBERRY	18	0.03	0.02	0.2	—	—	—	52	—
306.	TOMATO RIPE	351	0.12	0.06	0.4	—	14.0	30.0	27	—
307.	TOMATILO	48	0.05	0.02	2.1	—	—	—	2	—
308.	TREE TOMATO	324	0.11	0.06	2.1	—	—	—	0	—
309.	WOOD APPLE	61	0.04	0.17	0.8	—	—	—	3	—
310.	ZIZYPHUS	21	0.02	0.05	0.7	—	—	—	76	—
FISHES AND SEA FOODS										
311.	AIR	—	—	—	0.5	—	—	—	11	—
313.	BACHA	—	—	—	0.6	—	—	—	13	—
314.	BAM	—	—	—	0.9	—	—	—	3	438
317.	BELEY,	—	—	—	0.3	—	—	—	3	388
318.	BHANGER, fresh	—	—	—	1.8	—	—	—	12	—
320.	BHANGAN BATA	—	—	—	0.6	—	—	—	—	—
321.	BETKI, fresh	—	—	—	0.7	—	—	—	10	349
323.	BHOLE	—	—	—	0.5	—	—	—	14	—
325.	BOAL,	—	—	—	1.0	—	—	—	8	108
328.	CAT FISH,	—	—	—	2.5	—	—	—	—	—
333.	CHITAL	—	—	—	—	—	—	—	—	943
334	CRAB (muscle)	780	—	—	3.1	—	—	—	—	—
336.	FOLUI	—	—	—	0.8	—	—	—	6	1018
341.	HILSA	—	—	—	2.8	—	—	—	24	1364
342.	HORSE MACKEREL	—	—	—	2.9	—	—	—	—	—
346.	KALABASU	—	—	—	0.6	—	—	—	11	716
347.	KATLA	—	—	—	0.8	—	—	—	—	611
349.	KHOYRA, fresh	—	—	—	0.5	—	—	—	—	—
351.	KOI	—	—	—	0.8	—	—	—	32	891
353.	LATA	—	—	—	1.0	—	—	—	0	—
356.	MAGUR	—	—	—	—	—	—	—	—	639

Sl. No.	Name of the foodstuff	Caro-	Thia-	Ribofla-	Niacin	Total	Folic Acid (ug)		Vitamin	Choline
		tene ug.	mine mg.	vin mg.	mg.	B6 mg.	Free	Total	C mg.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
359.	MRIGAL	—	—	—	0.7	—	9.7	16.7	—	480
360.	MULLET	—	—	—	2.6	—	—	—	—	—
365.	PABDA	—	—	—	—	—	—	—	—	1018
366.	PANGAS	—	—	—	0.6	—	—	—	7	913
367.	PARSEY, fresh	—	—	—	0.8	—	—	—	6	—
370.	POMFRETS, white	—	—	0.15	2.6	—	—	—	—	—
371.	PRAWN	0	0.01	0.10	4.8	—	—	—	—	542
372.	PUTI	—	—	—	0.3	—	—	—	15	393
375.	RIBBON FISH, fresh	—	—	—	2.1	—	—	—	—	—
377.	ROHU	—	0.05	0.07	0.7	—	—	—	22	819
378.	SARADINE	—	—	—	2.6	—	—	—	—	—
379.	SARPUTI	—	—	—	—	—	—	—	14	—
380.	SHARK	—	—	—	2.5	—	—	—	—	—
381.	SHRIMP (small, dried)	—	—	—	—	—	15.7	18.6	—	—
382.	SEER	—	—	—	1.2	—	—	—	—	—
385.	SINGHI	—	—	—	0.8	—	—	—	9	64
386.	SOLE	—	—	—	0.5	—	—	—	9	572
393.	TENGRA, fresh	—	—	—	—	—	—	—	18	783
396.	WHITE BAIT	—	—	—	2.3	—	—	—	—	—
MEAT AND POULTRY										
397.	BEEF, meal	0	0.03	0.44	5.8	—	—	—	0	—
398.	BEEF, muscle (lean meat)	0 _a	0.15	0.04	6.4	—	—	—	2	—
399.	BUFFALO MEAT	—	—	—	—	—	4.6	7.8	—	—
401.	EGG, duck	540 _b	0.12	0.26	0.2	—	80.0	80.0	—	—
402.	EGG, hen	600 _b	0.10	0.40	0.1	—	70.3	78.3	0	—
405.	FOWL	—	—	0.14	—	—	3.2	6.8	—	—
406.	GOAT MEAT	—	—	—	—	—	0.5	4.5	—	—
408.	LIVER GOAT	—	—	—	—	—	61.2	176.2	—	—
409.	LIVER SHEEP	0 _c	0.36	1.70	17.6	—	65.5	188.0	20	—
410.	MUTTON	0 _d	0.18	0.14	6.8	—	1.0	5.8	—	—
412.	PORK	0	0.54	0.09	2.8	—	—	—	2	—
MILK AND MILK PRODUCTS §										
418.	MILK, ass's	—	0.06	0.03	0.1	—	—	—	10	—
419.	MILK, buffalo's	160	0.04	0.10	0.1	—	3.3	5.6	1	—
420.	MILK, cow's	174 _#	0.05	0.19	0.1	—	5.6	8.5	2	—
421.	MILK, goat's	182	0.05	0.04	0.3	—	0.7	1.3	1	—
422.	MILK, human	137	0.02	0.02	—	—	1.3	—	3	—
423.	CURDS, (cow's milk)	102	0.05	0.16	0.1	—	3.3	12.5	1	—
425.	SKIMMED MILK, liquid	—	—	—	0.1	—	—	—	1	—
426.	CHANNA, cow's milk	366	0.07	0.02	—	—	—	—	3	—
428.	CHEESE	273	—	—	—	—	—	—	—	—

Sl. No.	Name of the foodstuff	Caro- tene ug.	Thia- mine mg.	Ribofla- vin mg.	Niacin mg.	Total B6 mg.	Folic Acid (ug)		Vitamin C mg.	Choline
							Free	Total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
431.	KHOA (whole cow's milk)	497	0.23	0.41	0.4	—	—	—	6	—
432.	SKIMMED MILK POWDER (cow's milk)	0	0.45	1.64	1.0	—	—	—	5	—
433.	WHOLE MILK POWDER (cow's milk)	1400	0.31	1.36	0.8	—	—	—	4	—
FATS AND EDIBLE OILS										
434.	BUTTER	3200	—	—	—	—	—	—	—	—
435.	GHEE (cow)	2000	—	—	—	—	—	—	—	—
436.	GHEE (buffalo)	900	—	—	—	—	—	—	—	—
437.	HYDROGENATED OIL (fortified)	2500	—	—	—	—	—	—	—	—

a) Contains also 18 ug of Vit. A.
 b) Both contain 360 ug of Vit. A.
 c) Contains also 6690 ug of Vit. A.
 d) Contains also 9 ug of Vit. A.

Cow's milk contains in addition 6.0 ug carotene.

§ These values represent I.U. of Vitamin "A"

TOTAL AND BETA CAROTENE CONTENT OF SOME FOODSTUFFS

All values* are μg per 100 g. of edible portion

S. No.	Name of the Foodstuff	Carotene		S. No.	Name of the Foodstuff	Carotene	
		Total	Beta			Total	Beta
47	Agathi	45,000	15,440	130	Sweet Potato (Yellow)	2,200	1,810
48	Amaranthus Gangeticus, Tender	20,160	8,340	157	Giant Chillies	690	140
58	Ambat Chuka	9,400	2,800	178	Pumpkin	2,100	1,160
73	Colocasia Leaves, Green variety	15,700	5,920	218	Chillies, green	2,430	1,007
75	Coriander leaves	15,000	4,800	252	Cherries, red	470	140
77	Curry leaves	21,000	7,110	261	Guava, country	400	0
78	Drumstick leaves	42,000	19,690	264	Jack fruit	510	130
79	Fenugreek leaves	11,800	9,100	266	Jambu fruit	60	40
84	Gogu	17,700	6,970	278	Mango, ripe	2,210	1,990
84	Lettuce	7,000	1,100	283	Orange	2,240	190
93	Mayalu	9,360	2,840	287	Papaya, ripe	2,740	880
94	Mint	18,950	5,480	293	Phalsa	481	0
101	Ponnaganti	24,000	5,440	306	Tomato ripe	3,010	590
103	Radish leaves	13,000	2,200				
110	Spinach	9,440	2,740				
118	Carrot	8,840	6,460				

* These data are based on HPLC analysis of the foodstuffs.

Sl. No.	Name of the foodstuff	Caro- tene ug.	Thia- mine mg.	Ribofla- vin mg.	Niacin mg.	Total B6 mg.	Folic Acid (ug)		Vitamin C mg.	Choline
							Free	Total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
359. MRIGAL		—	—	—	0.7	—	9.7	16.7	—	480
360. MULLET		—	—	—	2.6	—	—	—	—	—
365. PABDA		—	—	—	—	—	—	—	—	1018
366. PANGAS		—	—	—	0.6	—	—	—	7	913
367. PARSEY, fresh		—	—	—	0.8	—	—	—	6	—
370. POMFRETS, white		—	—	0.15	2.6	—	—	—	—	—
371. PRAWN		0	0.01	0.10	4.8	—	—	—	—	542
372. PUTI		—	—	—	0.3	—	—	—	15	393
375. RIBBON FISH, fresh		—	—	—	2.1	—	—	—	—	—
377. ROHU		—	0.05	0.07	0.7	—	—	—	22	819
378. SARADINE		—	—	—	2.6	—	—	—	—	—
379. SARPUTI		—	—	—	—	—	—	—	14	—
380. SHARK		—	—	—	2.5	—	—	—	—	—
381. SHRIMP (small, dried)		—	—	—	—	—	15.7	18.6	—	—
382. SEER		—	—	—	1.2	—	—	—	—	—
385. SINGHI		—	—	—	0.8	—	—	—	9	64
386. SOLE		—	—	—	0.5	—	—	—	9	572
393. TENGRA, fresh		—	—	—	—	—	—	—	18	783
396. WHITE BAIT		—	—	—	2.3	—	—	—	—	—

MEAT AND POULTRY

Sl. No.	Name of the foodstuff	Caro- tene ug.	Thia- mine mg.	Ribofla- vin mg.	Niacin mg.	Total B6 mg.	Folic Acid (ug)		Vitamin C mg.	Choline
							Free	Total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
431.	KHOA (whole cow's milk)	497	0.23	0.41	0.4	—	—	—	6	—
432.	SKIMMED MILK POWDER (cow's milk)	0	0.45	1.64	1.0	—	—	—	5	—
433.	WHOLE MILK POWDER (cow's milk)	1400	0.31	1.36	0.8	—	—	—	4	—
FATS AND EDIBLE OILS										
434.	BUTTER	3200	—	—	—	—	—	—	—	—
435.	GHEE (cow)	2000	—	—	—	—	—	—	—	—
436.	GHEE (buffalo)	900	—	—	—	—	—	—	—	—
437.	HYDROGENATED OIL (fortified)	2500	—	—	—	—	—	—	—	—

a) Contains also 18 ug of Vit. A.
 b) Both contain 360 ug of Vit. A.
 c) Contains also 6690 ug of Vit. A.
 d) Contains also 9 ug of Vit. A.

Cow's milk contains in addition 6.0 ug carotene.

§ These values represent I.U. of Vitamin "A"

TABLE-3
MINERAL AND TRACE ELEMENTS: COMMON FOODS

All values are mg. per 100 gms. of edible portion.

Sl.No.	Name of the foodstuff	Mg.	Sod.	Pot.	Cu.	Mn.	Mo.	Zn.	Cr.	S.	Cl.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)

CEREAL GRAINS AND PRODUCTS

1.	BAJRA	137	10.9	307	1.06	1.15	0.069	3.1	0.023	147	39
2.	BARLEY	21	—	—	1.19	1.03	—	1.2	0.016	130	91
3.	ITALIAN MILLET	81	4.6	250	1.40	0.60	0.070	2.4	0.030	171	37
4.	JOWAR	171	7.3	131	0.46	0.78	0.039	1.6	0.008	54	44
5.	MAIZE, dry	139	15.9	286	0.41	0.48	0.038	2.8	0.004	114	33
6.	MAIZE, tender	40	51.7	151	—	—	—	—	—	61	34
7.	PANIVARAGU	153	8.2	113	1.60	0.60	—	1.4	0.020	157	19
8.	RAGI	137	11.0	408	0.47	5.49	0.102	2.3	0.028	160	44
9.	RICE, paraboiled hand pounded	157	—	—	0.24	1.10	0.078	1.4	0.009	—	—
10.	RICE, paraboiled milled 5%	91	—	—	0.17	0.80	0.068	1.4	0.006	—	—
	RICE, paraboiled milled 10%	61	—	—	0.17	0.66	0.054	1.3	0.005	—	—
12.	RICE, milled 5%	90	—	—	0.14	0.59	0.058	1.4	0.004	—	—
	RICE, milled 10%	64	—	—	0.07	0.51	0.045	1.3	0.003	—	—
14.	RICE, flakes	101	10.9	154	0.37	—	—	—	—	105	17
16.	SAMAI	133	8.1	129	1.00	0.68	0.016	3.7	0.180	149	13
17.	SANWA MILLET	82	—	—	0.60	0.96	—	3.0	0.090	—	—
18.	VARAGU	147	4.6	144	1.60	1.10	—	0.7	0.020	136	11
19.	WHEAT, bulgar (parboiled)	144	4.5	260	0.56	—	—	—	—	143	22
20.	WHEAT, whole	138	17.1	284	0.68	2.29	0.051	2.7	0.012	128	47
21.	WHEAT, flour (whole)	132	20.0	315	0.51	2.29	0.039	2.2	0.006	122	29
22.	WHEAT, flour (refined)	54	9.3	130	0.21	0.62	0.011	0.6	0.001	115	47
24.	WHEAT, semolina	—	21.0	83	—	—	—	—	—	—	—
25.	WHEAT, vermicelli	42	7.9	138	0.29	—	—	—	—	145	46

PULSES AND LEGUMES

28.	BENGAL GRAM, whole (desi)	119	37.3	808	1.18	1.21	0.154	6.1	0.008	179	58
	BENGAL GRAM, whole (kabuli)	169	—	—	1.01	0.74	—	2.9	0.032	—	—
29.	BENGAL GRAM, dhal	130	73.2	720	1.34	1.05	0.195	1.7	0.001	160	39
31.	BLACK GRAM, whole	154	—	—	1.05	1.01	0.810	3.3	0.012	—	—
	BLACK GRAM, dhal	130	39.8	800	0.93	0.96	0.425	3.0	0.012	174	9
32.	COW PEA	210	23.2	1131	0.87	1.34	1.890	4.6	0.029	165	10
34.	GREEN GRAM, whole	127	28.0	843	0.39	2.47	0.304	3.0	0.014	188	12
35.	GREEN GRAM, dhal	122	27.2	1150	0.39	1.02	0.446	2.8	0.010	214	25
36.	HORSE GRAM	156	11.5	762	1.81	1.57	0.749	2.8	0.024	181	8
37.	KHESARI, dhal	92	37.7	644	0.77	—	—	—	—	144	36

Sl.No.	Name of the foodstuff	Mg.	Sod.	Pot.	Cu.	Mn.	Mo.	Zn.	Cr.	S.	Cl.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
38.	LENTIL, whole	80	40.1	629	1.87	1.04	0.171	2.8	0.024	104	19
	LENTIL, dhal	74	—	—	1.37	0.81	—	3.1	0.020	—	—
39.	MOTH BEANS	225	29.5	1096	0.85	—	—	—	—	180	9
40.	PEAS, green	34	7.8	79	0.23	—	—	—	—	95	20
41.	PEAS, dry	100	20.4	725	1.29	0.58	0.638	2.3	0.032	189	59
42.	PEAS, roasted	122	14.7	750	1.32	—	—	—	—	200	73
43.	RAJMAH	184	—	—	1.45	1.60	—	4.5	0.029	—	—
44.	RED GRAM, whole	86	—	—	1.23	0.96	0.222	3.1	0.010	—	—
	RED GRAM, dhal	90	28.5	1104	1.20	0.69	0.283	0.9	0.001	177	5
45.	RED GRAM, tender	58	93.0	463	0.40	—	—	—	—	494	22
46.	SOYA BEAN (black)	238	—	—	1.38	2.35	—	4.4	0.029	—	—
	SOYA BEAN (white)	175	—	—	1.12	2.11	—	3.4	0.028	—	—
LEAFY VEGETABLES											
49.	AMARANTHUS, Gangeticus	122	230.0	341	0.08	0.36	0.130	0.18	0.007	61	88
58.	AMBAT CHUKA	123	—	—	0.04	0.40	—	0.27	0.006	—	—
62.	BETAL LEAVES	447	—	—	2.32	4.47	—	3.44	0.137	—	—
65.	BRUSSELS SPROUTS	26	7.9	477	0.07	—	—	—	—	212	22
66.	CABBAGE	31	—	—	0.02	0.18	0.078	0.30	0.005	—	—
69.	CELERY LEAVES	52	35.5	210	0.30	—	—	—	—	102	19
72.	COLOCASIA LEAVES	32	—	—	0.18	—	—	—	0.011	—	72
75.	CORIANDER LEAVES	31	58.3	256	0.14	0.50	1.120	0.32	0.014	49	43
77.	CURRY LEAVES	44	—	—	0.10	0.15	—	0.20	0.006	81	198
78.	DRUM STICK LEAVES	42	—	259	0.07	0.37	—	0.16	0.010	137	423
79.	FENUGREEK LEAVES	33	76.1	31	0.10	0.23	0.400	0.36	0.006	167	165
84.	GOGU	66	—	—	0.08	0.30	—	0.27	0.005	60	19
89.	LETTUCE	30	58.0	33	0.08	—	—	—	—	27	23
94.	MINT	60	—	—	0.18	0.57	—	0.44	0.008	84	34
100.	PARUPPU KEERAI	120	67.2	716	0.19	—	—	—	—	63	73
101.	PONNANGANNI	46	—	—	0.19	0.46	—	—	—	13	—
103.	RADISH LEAVES	22	—	—	0.02	0.01	—	0.08	0.002	—	—
108.	SAFFLOWER LEAVES	51	126.4	181	0.22	—	—	—	—	—	235
110.	SPINACH	64	58.5	206	0.10	0.56	0.010	0.30	0.005	30	54
113.	TAMARIND LEAVES, tender	26	—	—	0.02	0.12	—	0.26	0.009	63	94
ROOTS AND TUBERS											
115.	ARROW ROOT flour	—	30.0	20	—	—	—	—	—	—	—
117.	BEET ROOT	9	59.8	43	0.29	0.19	—	0.91	0.012	14	24
118.	CARROT	17	35.6	108	0.10	0.16	—	0.36	0.017	27	13
119.	COLOCASIA	28	9.0	550	0.18	0.28	—	0.31	0.005	—	—
122.	ONION, (big)	16	4.0	127	0.18	0.18	0.030	0.41	0.009	—	—
125.	POTATO	30	11.0	247	0.16	0.13	0.070	0.53	0.007	37	16
126.	RADISH, pink	196	63.5	10	0.07	0.15	—	0.68	0.009	—	—
129.	RADISH, white	—	33.0	138	0.40	—	—	—	—	—	—
130.	SWEET POTATO	27	9.0	393	0.02	0.22	—	0.11	0.006	—	—
132.	TAPIOCA, chips dried	66	7.5	764	0.15	—	—	—	—	58	10

Sl.No.	Name of the foodstuff	Mg.	Sod.	Pot.	Cu.	Mn.	Mo.	Zn.	Cr.	S.	Cl.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
135.	YAM, ordinary	17	9.0	237	0.12	0.12	—	0.45	0.016	—	—
136.	YAM, wild	34	11.0	450	0.16	—	—	—	—	35	29
OTHER VEGETABLES											
139.	BITTER GOURD (white)	36	17.8	152	0.10	0.08	—	0.46	0.005	15	8
140.	BITTER GOURD (green)	33	2.4	171	0.09	0.08	—	0.39	0.005	21	8
141.	BOTTLE GOURD	26	1.8	87	0.03	0.06	—	0.22	0.046	10	5
142.	BRINJAL	15	3.0	200	0.12	0.13	—	0.22	0.007	44	52
143.	BROAD BEANS	33	43.5	39	0.17	—	—	—	—	53	43
144.	CAULIFLOWER	18	53.0	138	0.13	0.10	—	0.40	0.003	231	34
146.	CLUTSTER BEANS	47	—	—	0.08	0.10	—	0.36	0.004	—	—
149.	CUCUMBER	14	10.2	50	0.09	0.14	0.070	0.23	0.002	17	15
151.	DRUM STICK	28	—	259	0.01	0.05	—	0.16	0.003	137	423
153.	FIELD BEANS, tender	17	55.4	74	0.10	0.12	—	0.40	0.004	40	31
155.	FRENCH BEANS	38	4.3	120	0.06	0.12	0.020	0.42	0.006	37	10
157.	GIANT CHILLES	12	—	—	0.12	0.06	—	0.13	0.006	—	—
158.	JACK, tender	—	35.0	328	—	—	—	—	—	—	—
159.	JACK FRUIT, seeds	54	63.2	246	0.19	—	—	—	—	356	14
164.	KOVAI	36	—	—	0.07	0.22	—	0.26	0.004	—	—
165.	KNOL-KHOL	33	112.0	37	0.05	0.11	—	0.24	0.019	143	67
166.	LADIES FINGERS	53	6.9	103	0.11	0.15	—	0.42	0.005	30	41
169.	LOTUS STEM, dry	168	438.0	3007	1.22	—	—	—	—	258	444
170.	MANGO, green	16	43.0	83	0.03	0.07	—	0.07	0.050	15	2
171.	ONION STALKS	104	2.2	109	0.45	0.74	—	2.29	0.039	33	7
172.	PAPAYA, green	—	23.0	216	—	—	—	—	—	—	—
173.	PARWAR	9	2.6	83	1.11	—	—	—	—	17	4
174.	PINK BEANS	—	32.2	117	0.13	—	—	—	—	182	47
175.	PLANTAIN, flower	54	20.1	185	0.10	—	—	—	—	68	68
176.	PLANTIAN, green	13	15.0	193	0.03	0.30	—	0.05	0.004	15	6
178.	PUMPKIN, fruit	38	5.6	139	0.05	0.05	—	0.26	0.005	16	4
180.	RIDGE GOURD	32	2.9	50	0.08	0.07	—	0.38	0.003	14	7
181.	SNAKE GOURD	28	25.4	34	0.27	0.14	—	0.31	0.004	35	21
183.	SWORD BEANS	—	29.0	1800	—	—	—	—	—	—	—
184.	TINDA, tender	14	35.0	24	0.12	—	—	—	—	—	44
185.	TOMATO, green	15	45.8	114	0.19	—	—	—	—	24	38
186.	VEGETABLE MARROW	13.0	27.3	94	0.22	—	—	—	—	11	9
187.	WATER CHEST NUT, fresh	72	—	—	1.31	0.85	—	1.56	0.011	—	—
NUTS AND OIL SEEDS											
189.	ALMOND	373	—	—	0.97	1.88	—	3.57	0.161	—	—
190.	ARECANUT (raw)	66	—	—	0.92	1.46	—	0.81	0.473	—	—
	ARECANUT (processed)	83	—	—	2.54	2.83	—	1.30	0.386	—	—
192.	CASHEW NUT	349	—	—	1.66	1.42	—	5.99	0.163	—	—
194.	COCONUT, dry	—	—	—	1.00	6.24	0.021	5.00	—	—	—

Sl.No.	Name of the foodstuff	Mg.	Sod.	Pot.	Cu.	Mn.	Mo.	Zn.	Cr.	S.	Cl.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
199.	COCONUT, meal deoiled	355	72.5	2003	—	—	—	—	—	431	374
200.	GARDEN CRESS SEEDS	430	—	—	—	—	—	—	—	1	41
201.	GINGELLY SEEDS	—	—	—	2.29	1.32	0.204	12.20	0.087	—	—
202.	GROUNDNUT	—	—	—	0.90	1.10	0.166	3.90	0.048	—	—
206.	MUSTARD SEEDS	—	—	—	0.83	2.56	0.089	4.80	0.063	—	—
209.	PIYAL SEEDS	373	10.2	436	086	—	—	—	—	186	25
210.	SAFFLOWER SEEDS	—	—	—	1.58	1.10	0.054	5.20	0.045	—	—
212.	WALNUT	302	—	—	1.67	2.62	—	2.32	0.101	—	—
CONDIMENTS AND SPICES											
215.	ASAFOETIDA	80	—	—	0.43	1.12	—	0.83	0.079	—	—
216.	CARDAMOM	173	—	—	0.47	8.92	—	2.81	0.031	—	—
217.	CHILLIES, dry	—	14.0	530	—	—	—	—	—	—	—
218.	CHILLIES, green	272	—	—	1.40	1.38	0.070	1.78	0.040	—	—
219.	CLOVES, dry	130	—	—	1.01	4.75	—	1.47	0.056	—	—
221.	CORIANDER SEEDS	239	32.0	990	1.01	1.67	—	3.26	0.050	—	—
222.	CUMIN SEEDS	475	126.0	980	0.71	1.02	—	2.66	—	—	—
223.	FENUGREEK SEEDS	124	19.0	530	0.71	1.03	—	3.08	0.064	—	—
224.	GARLIC, dry	71	—	—	0.63	0.86	—	1.93	0.020	—	—
225.	GINGER, fresh GINGER, dry (sonti)	405	—	—	0.74	5.56	—	1.93	0.057	—	—
227.	MACE	213	—	—	1.56	1.54	—	1.26	0.039	—	—
229.	NUT MEG, fruit	229	—	—	0.71	1.78	—	1.22	0.234	—	—
231.	OMUM	141	—	—	0.96	3.40	—	4.52	0.057	—	—
232.	PEPPER, dry (black)	171	—	—	1.42	4.14	—	1.31	0.074	—	—
235.	POPPY SEEDS (khas khas)	257	—	—	0.63	4.31	—	4.34	0.108	—	—
236.	TAMARIND PULP	41	—	—	0.20	0.55	—	—	0.056	—	—
237.	TURMERIC	278	—	—	0.39	8.38	—	2.72	0.069	—	—
FRUITS											
239.	AMLA	—	5.0	225	—	—	—	—	—	—	—
240.	APPLE	7	28.0	75	0.10	0.14	—	0.06	0.008	7	1
241.	APRICOTS, fresh	—	—	430	0.11	—	—	—	—	—	—
244.	BAEL FRUIT	—	—	600	0.21	—	—	—	—	—	—
245.	BANANA, ripe	41	36.6	88	0.16	0.20	—	0.15	0.004	7	8
247.	BILIMBI	—	—	130	0.05	—	—	—	—	—	—
250.	CAPE GOOSBERRY	31	0.9	320	0.19	—	—	—	—	43	12
252.	CHERRIES, red	27	—	320	0.08	0.08	—	0.33	0.005	—	—
255.	DATES, fresh	12	—	—	0.05	0.03	—	0.03	0.004	—	—
258.	GRAPES, pale green variety	82	—	—	0.20	0.11	—	0.10	0.007	—	—
261.	GUAVA, country	24	5.5	91	0.14	0.14	—	0.16	0.009	14	4
264.	JACK FRUIT, ripe	24	—	—	0.12	0.06	—	0.07	0.013	69	9
266.	JAMBU FRUIT	39	26.2	55	0.07	0.15	—	0.16	0.005	13	8
267.	KORUKKEPALLI	40	37	377	0.60	—	—	—	—	109	51
269.	LEMON	19	—	270	0.06	0.07	—	0.07	0.007	—	—

Sl.No.	Name of the foodstuff	Mg.	Sod.	Pot.	Cu.	Mn.	Mo.	Zn.	Cr.	S.	Cl.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
270.	LEMON SWEET	—	—	210	0.11	—	—	—	—	—	—
271.	LICHI	10	124.9	159	0.30	—	—	—	—	19	3
274.	LIME sweet, malta	—	—	170	0.51	—	—	—	—	—	—
275.	LIME sweet, mosambi	—	—	490	0.17	—	—	—	—	—	—
276.	LOQUAT	—	—	390	0.13	—	—	—	—	—	—
278.	MANGO, ripe	270	26.0	205	0.11	0.13	—	0.27	0.006	17	3
280.	MELON, musk	31	104.6	341	0.03	—	—	—	—	32	80
281.	MELON, water	13	27.3	160	0.05	—	—	—	—	42	21
283.	ORANGE	9	4.5	9.3	0.58	—	—	—	—	7	5
287.	PAPAYA, ripe	11	6.0	69	0.20	—	—	—	—	13	11
290.	PEACHES	21	2.0	453	0.06	—	—	—	—	26	0
291.	PEARS	7	6.1	96	0.40	—	—	—	—	14	1
293.	PHALSA	72	4.4	351	0.12	—	—	—	—	13	86
294.	PINE APPLE	33	34.7	37	0.13	0.56	—	0.11	0.011	20	13
295.	PLUMS	147	0.8	247	0.13	—	—	—	—	33	0
296.	POMEGRANATE	44	0.9	133	0.34	0.77	—	0.82	0.022	12	2
302.	ROSE APPLE	4	34.1	50	0.01	—	—	—	—	13	4
303.	SAPOTA	25	5.9	269	0.08	0.68	—	0.16	0.008	17	26
304.	SEETHPHAL	84	—	—	0.43	0.64	—	0.80	0.026	—	—
306.	TOMATO, ripe	—	12.9	146	0.19	0.26	—	0.41	0.015	11	6
307.	TOMATILLO	23	0.4	243	0.09	—	—	—	—	27	14
308.	TREE TOMATO	34	1.7	539	0.17	—	—	—	—	37	10
309.	WOOD APPLE	41	—	—	0.21	0.18	—	0.46	0.006	—	—
310.	ZIZYPHUS	13	—	—	0.12	0.17	—	0.10	0.007	—	—
FISHES AND OTHER SEA FOODS											
311.	AIR	—	—	—	0.06	—	—	—	—	—	—
313.	BACHA	—	—	—	0.11	—	—	—	—	—	—
314.	BAM	—	—	—	0.06	—	—	—	—	—	—
316.	BATA, small varieties	—	—	—	0.17	—	—	—	—	—	—
321.	BHEKTI	—	66.0	173	0.11	—	—	—	—	—	—
323.	BHOLA	—	—	—	0.05	—	—	—	—	—	—
325.	BOAL	—	—	—	0.08	—	—	—	—	—	—
330.	CHELA, dried	—	—	—	0.51	—	—	—	—	—	—
332.	CHINGRI, goda dried	—	—	—	1.40	—	—	—	—	—	—
333.	CHITAI	—	34.0	119	0.17	—	—	—	—	—	—
341.	HILSA	—	52.0	183	0.14	—	—	—	—	—	—
347.	KATLA	—	50.0	151	0.12	—	—	—	—	—	—
348.	KHORSULA	—	—	—	0.13	—	—	—	—	—	—
351.	KOI	—	64.0	195	0.16	—	—	—	—	—	30
356.	MAGUR	—	58.0	147	—	—	—	—	—	—	—
357.	MAHASOLE	—	—	—	0.12	—	—	—	—	—	—
359.	MRIGAL	—	—	—	0.12	—	—	—	—	—	—
365.	PABDA	—	—	—	0.09	—	—	—	—	—	—
366.	PANGAS	—	—	—	0.05	—	—	—	—	—	—
367.	PARSEY, fresh	—	—	—	0.14	—	—	—	—	—	—
371.	PRAWN	—	66.0	262	—	—	—	—	—	—	—
377.	ROHU	13	101.0	288	0.13	—	—	—	—	103	3

Sl.No.	Name of the foodstuff	Mg.	Sod.	Pot.	Cu.	Mn.	Mo.	Zn.	Cr.	S.	Cl.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
379.	SARPUTI	—	—	—	0.08	—	—	—	—	—	—
385.	SINGHI	—	53.0	223	0.15	—	—	—	—	—	—
386.	SOLE	—	—	—	0.11	—	—	—	—	—	—
390.	TAPRA, dried	—	—	—	0.71	—	—	—	—	—	—
391.	TAPSI, dried	—	—	—	1.20	—	—	—	—	—	—
394.	TENGRA, dried	—	—	—	0.58	—	—	—	—	—	—
MEAT AND POULTRY											
398.	BEEF MUSCLE	—	52.0	214	—	—	—	—	—	—	—
408.	LIVER GOAT	—	73.0	160	—	—	—	—	—	—	—
410.	MUTTON, muscle	—	33.0	270	—	—	—	—	—	—	—
MILK AND OTHER PRODUCTS											
419.	MILK buffalo's	—	19.0	90	—	—	—	—	—	—	—
420.	MILK, cow's	—	73.0	140	—	—	—	—	—	—	—
421.	MILK, goat's	—	11.0	110	—	—	—	—	—	—	—
423.	CURD (cow's milk)	—	32.0	130	—	—	—	—	—	—	—
BEVERAGES (ALCOHOLIC)											
447.	PACHWAI (assam)	51	—	110	—	—	—	—	—	25	—

TABLE-4
PROXIMATE PRINCIPLES: LESS FAMILIAR FOODS

All the values are per 100 gms. of edible portion.

Sl. No.	Name of the foodstuff	Mois- ture g.	Protein (Nx6.25) g.	Fat g.	Min- erals g.	Fibre g.	Carbo hydrates g.	Energy Kcal.	Calcium mg.	Phos- phorus mg.	Iron mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
CEREALS AND OTHER MINOR SEEDS											
452. AMARANTH SEEDS	10.0	14.7	1.9	3.1	9.6	60.7	319	510	397	11.0	
453. BAMBOO SEEDS	7.8	13.1	1.2	1.1	0.9	75.9	367	37	162	6.4	
454. BANTI	11.3	8.3	4.3	1.4	—	74.7	371	14	121	5.0	
455. BUCK WHEAT	11.3	10.3	2.4	2.3	8.6	65.1	323	64	355	15.5	
456. CHENOPODIUM ALBUM SEEDS		9.2	14.4	7.3	3.57	—	—	—	300	416	5.3
457. COWAGE SEED FLOUR		5.3	28.2	7.0	1.7	2.2	55.6	398	188	211	—
458. DAINCHA SEEDS	10.8	28.1	3.8	3.6	8.6	45.1	327	240	390	16.5	
459. JOB'S TEARS	10.8	17.5	6.0	1.8	0.5	63.4	378	23	408	4.2	
460. OATMEAL	10.7	13.6	7.6	1.8	3.5	62.8	374	50	380	3.8	
461. KITTUL FLOUR	13.1	2.4	0.3	2.5	—	81.7	339	130	60	20.0	
462. LOTUS SEED	10.0	17.2	2.4	3.8	2.6	64.0	346	36	294	2.3	
463. MAKHANA	12.8	9.7	0.1	0.5	—	76.9	347	20	90	1.4	
464. RAJKEERA SEEDS	9.3	16.5	5.3	3.5	2.7	62.7	364	223	655	17.6	
465. WATER LILY SEEDS	10.0	8.3	1.0	0.9	4.2	75.6	345	20	110	—	
PULSES AND LEGUMES											
466. GOA BEANS	7.8	32.7	18.4	5.1	7.2	—	—	—	—	—	—
467. MALMANDI	—	26.1	—	2.18	—	—	—	154	291	—	—
468. SUTARI	9.6	21.5	0.3	3.5	4.2	60.9	332	302	297	—	—
LEAFY VEGETABLES											
469. BAMBOO, tender shoots	88.8	3.9	0.5	1.1	—	5.7	43	20	65	0.1	
470. CEYLON PASALI	91.2	1.9	0.7	1.9	—	4.3	31	120	16	0.9	
471. CHIMTI SAG	83.2	3.2	0.7	3.9	2.1	6.9	46	194	48	—	
472. GIRIA SAG	89.3	2.0	0.4	3.8	0.9	3.6	26	50	79	1.6	
473. GULCHARNI	91.7	1.3	0.5	1.2	1.0	4.3	27	59	60	—	
474. KASINI KEERAI	91.2	1.9	0.7	1.6	—	4.6	33	94	21	8.0	
475. KATHA SAG	90.6	1.9	0.5	2.3	1.7	3.0	24	253	35	—	
476. KENA SAG	92.2	2.1	0.4	2.0	0.8	2.5	22	100	50	—	
477. KHESARI LEAVES	84.2	6.1	1.0	1.1	2.1	5.5	55	160	100	7.3	
478. KOILA KARHA SAG	87.2	3.0	0.4	2.8	1.4	5.2	36	330	21	—	
479. KONAR SAG	78.1	3.6	1.0	2.1	5.5	9.7	62	312	92	—	
480. KORLA LEAVES	82.7	6.1	0.7	1.5	—	9.0	67	112	122	12.1	
481. MANAL KEERAI	91.7	2.4	0.4	1.0	2.2	2.3	22	370	67	12.3	
482. MATA SAG (lupu)	7.2	7.2	4.8	9.5	13.5	57.8	303	1717	80	—	

Sl. No.	Name of the foodstuff	Mois-	Protein	Fat	Mine-	Fibre	Carbo	Energy	Calcium	Phos-	Iron
		ture g.	(Nx6.25), g.	g.	g.	g.	hydrates g.	Kcal.	mg.	phorus mg.	mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
483.	NACHUKOTTAI										
	KEERAI	82.6	4.3	0.7	3.3	—	9.1	60	585	45	41.6
484.	NEEM LEAVES										
	mature	59.4	7.1	1.0	3.4	6.2	22.9	129	510	80	17.1
485.	NEEM LEAVES										
	Tender	59.4	11.6	3.0	2.6	2.2	21.2	158	130	190	25.3
486.	PACHARISI KEERAI	78.1	4.7	1.7	3.2	—	12.3	83	546	106	21.2
487.	PANNA KEERAI	85.0	3.8	0.6	2.3	2.3	6.0	45	268	33	24
488.	PARWAR SAG	80.5	5.4	1.1	3.0	4.2	5.8	55	531	73	—
489.	PASARAI KEERAI	86.0	1.7	0.4	1.8	2.2	7.9	42	148	25	58.2
490.	PATUA SAG	81.4	5.1	1.1	2.7	1.6	8.1	63	241	93	—
491.	POTATO LEAVES	88.0	4.4	0.9	1.8	1.3	3.6	40	120	50	—
492.	PULIARA KEERAI	85.0	4.3	1.5	2.0	—	7.2	60	116	35	4.1
493.	PUNNAKU KEERAI	80.6	6.1	0.7	2.5	—	10.1	71	250	38	35.7
494.	PERANDAI	87.4	1.2	0.3	2.0	1.8	7.3	37	650	50	2.1
495.	SARAVALLAI										
	KEERAI	91.3	2.0	0.4	2.2	0.9	3.2	24	100	30	38.5
496.	SARLI SAG	76.9	4.0	1.1	1.6	1.5	14.9	86	127	51	—
497.	SEEMAI										
	PONNANGANNI	85.7	3.3	0.8	2.7	—	7.5	50	322	29	16.8
498.	SINDUAR SAG	88.0	2.0	0.7	2.0	1.5	5.8	38	323	38	—
499.	SINDUAR, (wild)	87.4	1.1	0.8	2.6	3.7	4.4	29	104	40	—
500.	SONCHAL SAG	86.2	4.3	0.6	2.1	1.2	5.6	45	300	60	19.5
501.	SOYA LEAVES	79.5	6.0	0.5	3.2	—	10.8	72	180	190	8.0
502.	SWEET POTATO										
	GREENS	80.7	4.2	0.8	2.2	2.4	9.7	63	360	60	10.0
503.	THOODUVALAI										
	KEERAI	84.7	3.9	0.7	3.8	2.3	4.6	40	334	52	5.0
504.	VEETHI KEERAI	72.2	7.5	0.7	4.0	2.2	13.4	90	366	62	11.5
505.	VELAIKEERAI	80.0	6.5	0.8	3.9	—	8.8	68	778	100	31.6
506.	VELLA KEERAI	80.4	5.6	1.9	3.8	—	8.3	73	881	73	24.4
507.	WATER CRESS	89.2	2.9	0.2	2.2	0.6	4.9	33	290	140	4.6
ROOTS AND TUBERS											
508.	BOKWA	79.6	2.9	0.3	0.8	0.9	15.5	76	25	53	—
509.	BUDHIA	66.5	0.7	0.4	0.9	1.6	29.9	126	200	40	—
510.	BID ROOT	47.7	2.1	0.3	1.1	0.9	47.9	203	11	133	—
511.	CANNA, edible	73.0	1.1	0.4	1.0	0.5	24.0	104	20	25	0.8
512.	CHUMBIA	66.7	1.8	0.2	1.0	1.5	28.8	124	52	49	—
513.	CHURKIA	83.7	1.6	0.1	0.6	1.2	12.8	59	19	38	—
514.	EPIDONG SANGA	91.6	2.2	0.2	1.6	2.7	1.7	17	277	59	—
515.	GARMAR	87.4	0.3	0.2	0.7	—	11.4	49	153	13	0.6
516.	JIPOO SANGA	94.1	0.6	0.1	0.2	0.4	4.6	22	11	7	—
517.	LOTUS ROOT	85.9	1.7	0.1	0.2	0.8	11.3	53	21	74	0.4
518.	MOOR SANGA	45.4	2.1	0.3	0.6	1.6	50.0	211	25	21	—
519.	MURUM SANGA	82.5	1.4	0.1	0.6	0.7	14.7	65	24	24	—

Sl. No.	Name of the foodstuff	Mois- ture g.	Protein (Nx6.25) g.	Fat g.	Mine- rals g.	Fibre g.	Carbo hydrates g.	Energy Kcal.	Calcium mg.	Phos- phorus mg.	Iron mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
520.	OCHEN SANGA	88.6	1.5	0.1	1.1	1.1	7.6	37	64	89	—
521.	SONG	65.0	2.3	0.1	1.0	0.7	30.9	134	39	64	—
522.	TURUM SANGA	66.4	1.9	0.4	1.7	1.6	28.0	123	342	19	—
523.	WATER LILY, red	49.1	4.1	0.3	1.6	1.5	43.4	193	65	217	—
524.	WATER LILY, white	62.5	3.1	0.3	1.3	1.1	31.7	142	76	220	—
OTHER VEGETABLES											
525.	AGATHI FLOWERS	92.9	1.0	0.5	0.4	0.8	4.4	26	9	5	—
526.	ARTICHOKE	77.3	3.6	0.1	1.8	1.2	16.0	79	120	100	2.3
527.	BAGNAHA	67.0	6.1	3.8	2.0	9.6	11.5	105	64	81	—
528.	BOROOEE, raw	81.1	1.5	0.2	0.8	2.3	14.1	64	30	18	—
529.	CHALTHA	82.3	0.8	0.2	0.8	2.5	13.4	59	16	26	—
530.	KANDAN KATHIRI	75.5	3.1	0.8	1.6	14.2	4.8	39	100	90	1.2
531.	LOTUS SEED,green and mature	84.6	3.9	0.7	1.1	0.9	8.8	57	49	151	—
532.	MADAPU GINJA	36.0	20.2	18.8	2.6	—	22.4	340	270	440	4.5
533.	MUSHROOM	88.5	3.1	0.8	1.4	0.4	4.3	43	6	110	1.5
534.	PHUTKA CHATTOO	80.9	3.9	0.4	0.9	—	14.1	75	16	73	—
535.	NISORHA FLOWERS	79.6	4.7	0.5	2.6	3.3	9.3	61	1740	116	—
536.	RHUBARB STALKS	92.7	1.1	0.5	1.1	0.3	4.3	26	120	10	2.2
537.	SANGA KA PHAL	73.4	1.5	0.1	0.9	1.0	23.1	99	16	48	—
538.	SANNHEMP FLOWERS	78.9	4.8	0.6	1.4	3.9	10.4	66	200	100	—
539.	SEA WEEDS, fresh	91.0	0.8	0.2	4.0	0.3	3.7	20	134	10	7.0.
540.	SEA WEEDS, dry	9.5	10.8	0.8	22.7	5.0	51.2	255	1543	114	—
541.	SILK COTTON FLOWERS	86.4	1.5	0.3	0.7	1.6	9.5	47	22	45	—
542.	TETROLOBAR BEAN	90.6	1.9	0.4	0.5	1.8	4.8	30	30	20	—
543.	WATER LILY FLOWERS	90.8	1.6	0.6	0.7	0.9	5.4	33	29	18	—
NUTS AND OIL SEEDS											
544.	ADDA SEED (kernel)	9.5	27.3	29.9	3.6	1.1	28.6	493	302	718	6.8
545.	JUNGLI BADAM	35.6	11.4	35.5	2.4	—	—	—	33	415	1.7
546.	OYSTERNUT	4.4	29.7	63.3	2.6	—	0	689	10	570	4.1
547.	MANGO SEED KERNEL	55.0	2.6	4.2	1.4	0.9	35.9	192	40	110	0.7
548.	ROSELLE SEEDS	6.5	20.9	21.3	4.9	15.5	30.9	399	300	600	—
549.	BAJJAR BHANG	6.6	17.2	8.5	3.9	2.2	61.6	392	83	424	20.0
550.	TAMARIND SEED KERNEL, roasted	9.9	16.1	7.3	1.6	1.0	64.1	387	121	237	—
551.	PUMPKIN SEED	8.0	24.3	47.2	4.7	0.2	15.6	584	50	830	5.5
552.	OKRA (whole seed)	6.6	21.1	17.9	4.7	23.4	—	—	—	—	—
553.	OKRA (kernel)	3.7	38.9	36.5	6.0	0.8	—	—	—	—	—
554.	CLEOME VISCOSA defatted seed cake	6.4	20.4	—	6.3	7.20	—	—	—	—	—
555.	MARKING NUT (kernel)	3.8	26.4	36.4	3.6	1.4	28.4	587	295	836	6.1

Sl. No.	Name of the foodstuff	Mois- ture g.	Protein (Nx6.25) g.	Fat g.	Mine- rals g.	Fibre g.	Carbo hydrates g.	Energy Kcal.	Calcium mg.	Phos- phorus mg.	Iron mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
FRUITS											
556.BAINCHA		67.8	1.7	1.8	1.3	4.7	22.7	114	100	100	—
557.BAMBOO FRUIT		56.3	3.9	0.1	1.6	3.9	34.2	153	10	110	1.5
558.BLACKBERRY		87.2	1.3	0.5	0.5	3.8	6.7	37	30	20	4.3
559.BOROOEE		74.1	2.0	0.3	1.3	4.7	17.6	81	68	64	—
560.CARAMBOLA		91.9	0.7	0.1	0.4	0.8	6.1	28	4	11	—
561.CHERIMOYER		76.4	1.3	0.3	0.3	1.5	20.2	89	30	20	0.4
562.DURIAN		58.0	2.8	3.9	1.2	—	34.1	183	10	50	1.0
563.GAB		69.6	1.4	0.1	0.8	1.5	26.6	113	58	27	—
564.JURMATA		46.0	4.8	0.3	2.2	3.4	43.3	195	115	101	—
565.KESAUR		80.2	1.6	0.1	0.5	0.6	17.0	75	11	15	—
566.KILA PAZHAM		79.5	0.8	0.6	0.3	7.3	11.5	55	20	10	1.4
567.KUSUM FRUITS		86.2	1.5	0.8	1.0	0.6	9.9	53	15	42	—
568.LANGSAT		86.5	0.8	0.3	0.6	2.3	9.5	44	20	30	0.5
569.MATASURA, whole fruit		72.3	1.9	1.0	1.1	13.1	10.6	59	138	28	—
570.MATASURA, Skin & Pulp		84.1	2.3	1.6	1.2	1.7	9.1	60	16	22	—
571.MULCHARI		54.7	1.8	1.0	2.3	4.3	35.9	160	212	30	—
572.NEEM FRUIT		81.9	1.3	1.0	0.7	—	15.1	75	25	41	—
573.NISORHA		82.5	1.8	1.0	2.2	0.3	12.2	65	40	60	—
574.PANIYALA		77.7	0.5	0.1	0.8	1.0	19.9	83	43	25	—
575.PAPA		46.9	3.7	3.1	1.9	9.5	34.9	182	24	91	—
576.PERAR		81.7	1.0	0.2	0.7	3.9	12.5	56	33	13	—
577.PIPAL TREE FIGS		62.4	2.5	1.7	2.3	9.9	21.2	110	289	89	—
578.PIYAL		74.3	2.2	0.8	1.7	1.5	19.5	94	78	28	—
579.RAYAN		68.6	0.5	2.4	0.8	—	27.7	134	83	17	0.9
580.SIRK		55.3	3.2	1.3	2.0	4.9	33.3	158	270	94	—
581.STAR APPLE		91.9	0.3	0.2	0.3	1.0	6.3	28	5	10	—
582.THAVITTU PAZHAM		82.5	0.6	0.2	0.4	5.6	10.7	47	40	15	0.9
583.TUMKI		70.6	0.8	0.2	0.8	0.8	26.8	112	60	20	0.5
584.VIKKI PAZHAM		59.3	1.4	0.1	1.1	1.6	36.2	153	37	26	311
MEAT AND POULTRY											
585.BOORDOOD		2.1	49.3	44.5	4.1	—	—	598	48	457	—
586.DHAUNS		79.1	19.6	0.4	1.0	—	—	82	10	176	—
587.FIELD RAT'S MEAT		73.9	23.6	1.0	1.4	—	0.1	104	30	242	—
588.MEAT OF NARROW SNOUTED CROCODILE		77.4	20.6	0.4	1.3	—	0.3	87	13	162	—
589.RED ANTS WITH EGGS		71.6	13.4	4.6	1.3	—	9.1	131	104	107	—
590.WOOD SAND PIPER		72.1	22.9	2.1	1.4	—	1.5	117	8	300	—
591.YEAST DRIED (brewer's)		13.6	39.5	0.6	7.0	0.2	39.1	320	440	149	—
592.YEAST DRIED (food)		7.8	35.7	1.8	8.4	—	46.3	344	160	2090	—

TABLE-5
VITAMIN CONTENT: LESS FAMILIAR FOODS

All the values are per 100 gms. of edible portion.

Sl. No.	Name of the foodstuff	Caro-	Thia-	Ribofla-	Niacin	Total	Folic Acid (ug)		Vitamin
		tene ug.	mine mg.	vin mg.	mg.	B6 mg.	Free	Total	C mg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CEREALS AND OTHER MINOR SEEDS									
453. BAMBOO SEEDS		—	0.17	0.12	1.1	—	—	—	0
454. BANTI		0	0.35	0.03	1.8	—	—	—	0
455. BUCK WHEAT		0	0.90	0.34	4.4	—	—	—	0
456. CHENOPODIUM									
ALBUM SEEDS		—	0.17	0.17	3.5	—	—	—	—
459. JOB'S TEARS		—	0.31	0.15	6.7	—	—	—	0
460. OAT MEAL		0	0.98	0.16	1.1	—	32.0	34.0	0
PULSES AND LEGUMES									
467. MALMANDI		—	0.8	0.31	4.47	—	—	—	—
LEAFY VEGETABLES									
469. BAMBOO TENDER									
SHOOTS		0	0.08	0.19	0.2	—	—	—	5
472. GIRIA SAG		2100	0.01	0.05	0.2	—	—	—	13
477. KHESARI LEAVES		3000	0.01	0.03	—	—	—	—	41
480. KORLA LEAVES		1764	0.10	0.27	1.70	—	—	—	10
486. PACHARISI KEERAI		—	—	—	—	—	—	—	44
495. SARAVALLAI KEERAI		—	—	—	—	—	—	—	70
500. SONCHAL SAG		2490	—	—	0.2	—	—	—	79
501. SOYA LEAVES		—	—	0.16	—	—	—	—	—
502. SWEET POTATO									
GREENS		750	0.07	0.24	1.7	—	—	—	27
507. WATER CRESS		2803	0.12	0.38	0.8	—	—	—	13
ROOTS AND TUBERS									
511. CANNA edible		0	0.06	0.06	1.7	—	—	—	5
515. GARMAR		93	0.04	0.05	0.4	—	—	—	0
517. LOTUS ROOT		—	0.10	—	—	—	—	—	22
OTHER VEGETABLES									
526. ARTICHOKE		37	0.23	0.01	—	—	—	—	0
528. BOROOEE raw		—	—	—	—	—	—	—	6
536. RHUBARB STALKS		—	—	—	—	—	—	—	37
NUTS AND OILSEEDS									
544. ADDA SEED (kernel)		—	0.17	0.17	1.1	—	—	—	—
545. JUNGLI BADAM		0	0.06	0.08	1.1	—	—	—	5
554. CLEOME VIScosa									
defatted seed cake		0	0.11	0.15	0.15	—	—	—	—

Sl. No.	Name of the foodstuff	Caro- tene ug.	Thia- mine mg.	Ribofla- vin mg.	Niacin mg.	Total B6 mg.	Folic Acid (ug)		Vitamin C mg.
							Free	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

CONDIMENTS AND SPICES

557. BAMBOO FRUIT	11	0.09	0.09	—	—	—	—	—	1
558. BLACK BERRY	7	—	—	2.0	—	—	—	—	9
561. CHERIMOYER	2	0.03	0.21	1.0	—	—	—	—	7
562. DURIAN	12	—	—	—	—	—	—	—	—
566. KILA PAZHAM	48	—	—	—	—	—	—	—	—
568. LANGSAT	7	0.09	0.12	0	—	—	—	—	1
579. RAYAN	495	0.07	0.08	0.7	—	—	—	—	16
582. THAVITTU PAZHAM	44	0.07	0.04	0.3	—	—	—	—	0
583. TUMKI	361	0.01	0.04	2.3	—	—	—	—	1
584. VIKKI PAZHAM	190	0.02	0.06	0.3	—	—	—	—	0

TABLE-6
MINERAL AND TRACE ELEMENTS: LESS FAMILIAR FOODS

All values are mg. per 100 gms. of edible portion.

Sl.No.	Name of the foodstuff	Mg.	Sod.	Pot.	Cu.	Mn.	Mo.	Zn.	Cr.	S.	Cl.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
CEREAL GRAINS AND PRODUCTS											
453.	BAMBOO SEEDS	32	91.0	—	0.19	—	—	—	—	—	76
455.	BUCK WHEAT	227	16.2	362	0.17	—	—	—	—	148	6
456.	CHENOPODIUM ALBUM SEEDS	292	—	—	0.52	2.13	0.067	2.43	—	—	—
464.	RAJKEERA SEEDS	351	—	—	0.63	—	—	—	—	174	9
466.	GOA BEANS (whole)	269	—	—	1.04	3.30	—	3.0	0.029	—	—
LEAFY VEGETABLES											
485.	NEEM LEAVES, tender	127	72.2	254	0.60	—	—	—	—	96	26
500.	SONCHAL SAG	—	680	—	0.39	—	—	—	—	—	—
501.	SOYA LEAVES	57	—	—	0.09	0.45	0.439	—	0.012	—	—
NUTS AND OILSEEDS											
545.	JUNGLI BADAM	274	—	517	0.82	—	—	—	—	122	12
549.	BAJJAR BHANG	405	—	—	—	—	—	—	—	—	23
582.	THAVITTU PAZHAM	30	7.7	106	0.15	—	—	—	—	30	19
584.	VIKKI PAZHAM	37	3.9	435	0.08	—	—	—	—	68	85

TABLE-7
ESSENTIAL AMINO ACIDS: COMMON FOODS

Sl. No.	Name of the foodstuff	Approximate total N g/100 gms.	Argi- nine	Histi- dine	Lysine	Trypto- phan	Phenyl- alanine	Tyro- sine	Methio- nine	Cys- tine	Threo- nine	Leu- cine	Isoleu- cine	Valine
			(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1)	(2)	(3)												
CEREAL GRAINS AND PRODUCTS														
1.	BAJRA	1.86	300	140	190	110	290	200	150	110	240	750	260	330
2.	BARLEY	1.84	300	180	230	100	310	180	100	100	200	420	240	310
3.	ITALIAN MILLET	1.97	220	130	140	060	420	—	180	100	190	1040	480	430
4.	JOWAR	1.66	240	160	150	070	300	180	100	090	210	880	270	340
5.	MAIZE (dry)	1.78	290	160	200	040	290	240	120	100	280	720	240	300
7.	PANIVA RAGU	2.00	290	110	190	050	310	—	160	—	150	760	410	410
8.	RAGI	1.17	300	130	220	100	310	220	210	140	240	690	400	480
10.	RICE, Paraboiled, milled	1.02	640	190	220	070	350	300	220	100	290	560	310	460
12.	RICE, raw, milled	1.09	480	130	230	080	280	290	150	090	230	500	300	380
16.	SAMAI	1.23	250	120	110	060	330	—	180	090	190	760	370	350
18.	VARAGU	1.33	270	120	150	050	430	—	180	110	200	650	360	410
20.	WHEAT, whole	1.89	290	130	170	070	280	180	090	140	180	410	220	280
22.	WHEAT flour, refined	1.76	190	120	110	060	290	130	090	140	150	400	220	240
23.	WHEAT, germ	4.67	460	160	380	070	230	190	110	100	260	410	240	300
PULSES AND LEGUMES														
28.	BENGAL GRAM (whole)	2.74	570	160	440	050	360	180	080	080	220	580	320	310
31.	BLACK GRAM dhal	3.84	520	170	400	070	310	140	090	080	220	500	340	310
32.	COW PEA	3.86	420	200	430	070	320	230	090	080	230	480	270	310
33.	FIELD BEAN	3.98	530	180	500	030	330	—	040	080	250	550	360	310
34.	GREEN GRAM, whole	3.84	500	170	460	060	350	100	080	060	200	510	350	320
36.	HORSE GRAM	3.52	530	190	520	070	380	—	070	130	230	540	370	390
37.	KHESARI DHAL	4.51	490	160	470	050	260	—	030	070	140	410	410	250
38.	LENTIL	4.02	540	160	440	060	270	200	050	070	220	470	270	310
39.	MOTH BEANS	3.78	—	210	340	040	280	—	060	030	—	420	310	200
40.	PEAS	1.15	570	130	400	060	250	220	060	080	240	380	290	290
41.	PEAS (dry)	3.15	570	130	440	060	280	170	050	070	240	430	280	300
43.	RAJMAH	3.66	370	180	460	060	340	100	060	040	270	470	300	330
44.	REDGRAM DHAL	3.57	360	250	480	040	460	130	060	060	200	450	250	260
46.	SOYA BEAN	6.91	450	150	400	080	300	210	080	100	240	480	320	320

Sl. No.	Name of the foodstuff	Approximate total N g/100 gms.	Argi-	Histi-	Lysine	Trypto-	Phenyl-	Tyro-	Methio-	Cys-	Threo-	Leu-	Isoleu-	Valine
			nine	dine	phan	alanine	sine	nine	tinge	nine	cine	cine	cine	ine
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
LEAFY VEGETABLES														
47.	AGATHI	1.34	360	120	250	100	380	—	090	090	300	560	390	430
49.	AMARANTH, gangeticus tender	0.64	240	130	250	070	180	190	070	040	140	370	290	280
59.	BATHUA LEAVES	0.59	—	—	750	020	110	—	050	—	170	410	440	290
60.	BEET GREENS	0.54	180	090	210	060	190	150	050	060	200	300	180	210
63.	BOTTLE GOURD LEAVES	0.37	280	140	300	—	310	—	090	070	220	410	260	040
65.	BRUSSELS SPROUTS	0.75	390	140	340	080	230	—	060	040	270	340	310	300
66.	CABBAGE	0.29	450	130	240	070	200	120	060	070	220	340	230	260
67.	CARROT LEAVES	0.82	270	120	280	090	410	—	110	—	280	440	280	340
69.	CELERY LEAVES	0.13	250	090	150	080	280	—	140	—	210	430	240	300
72.	COLOCASIA LEAVES	1.09	250	130	260	040	180	—	060	—	150	360	310	280
78.	DRUMSTICK LEAVES	1.07	380	140	320	100	290	—	110	130	250	460	280	350
79.	FENUGREEK LEAVES	0.70	350	110	300	080	300	—	090	—	200	390	330	320
84.	GOGU	0.27	310	090	400	040	200	—	070	—	210	440	320	240
87.	KNOL-KHOL GREENS	0.56	—	—	540	370	160	—	050	—	130	500	330	310
89.	LETTUCE	0.34	300	110	310	050	280	170	070	—	270	390	320	320
102.	PUMPKIN LEAVES	0.74	430	100	340	080	340	310	110	060	310	630	310	360
108.	SAFFLOWER LEAVES	0.40	—	—	610	030	160	—	060	—	170	700	540	410
109.	SHEPU	0.48	—	—	450	030	090	—	020	—	120	290	350	280
110.	SPINACH	0.32	350	140	400	100	330	310	110	080	290	530	300	350
113.	TAMARIND LEAVES, tender	0.92	370	140	300	—	390	220	080	060	290	580	330	360
114.	TURNIP GREENS	0.64	300	120	320	080	260	220	080	070	240	410	240	280
ROOTS AND TUBERS														
117.	BEET ROOT	0.27	320	100	410	060	210	170	070	120	250	330	200	230
118.	CARROT	0.14	250	090	230	040	210	140	070	060	210	310	230	310
119.	COLOCASIA	0.48	470	110	300	110	320	230	080	160	280	510	270	380
122.	ONION	0.19	170	070	290	090	180	—	070	—	090	170	090	140
125.	POTATO	0.26	330	100	320	100	270	170	090	050	220	380	270	310
129.	RADISH	0.11	700	160	270	020	270	—	050	—	230	420	300	390

Sl. No.	Name of the foodstuff	Approximate total N g/100 gms.	mg. per gm N											
			Argi- nine	Histi- dine	Lysine	Trypto- phan	Phenyl- alanine	Tyro- sine	Methio- nine	Cys- tine	Threo- nine	Leu- cine	Isoleu- cine	Valine
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
130. SWEET														
	POTATO	0.19	280	090	260	110	270	150	100	030	280	360	290	380
131.	TAPIOCA	0.12	580	110	290	080	180	100	050	090	200	300	250	240
133.	TURNIP	0.08	250	070	230	080	180	—	050	010	210	340	220	230
135.	YAM (ordinary)	0.22	480	120	280	070	300	200	100	—	220	400	230	290
OTHER VEGETABLES														
137.	ASH GOURD	0.06	190	040	070	030	160	—	060	—	190	380	350	310
139.	BITTER GOURD	0.26	270	080	210	040	240	—	150	—	250	420	370	370
141.	BOTTLE GOURD	0.03	100	040	350	030	140	—	030	—	170	350	320	230
142.	BRINJAL	0.22	210	130	330	060	250	240	070	030	230	380	270	320
144.	CAULIFLOWER	0.42	290	120	360	090	230	—	100	—	260	440	300	350
149.	CUCUMBER	0.06	470	090	270	050	140	—	060	—	160	260	190	210
155.	FRENCH BEANS	0.27	280	150	360	090	260	210	080	060	250	430	280	340
158.	JACK, tender	0.42	120	060	300	080	480	—	090	090	360	500	450	550
159.	JACK FRUIT seed	1.06	—	—	360	070	260	—	050	060	270	330	300	410
166.	LADIES FINGERS	0.30	230	110	210	040	140	270	080	060	140	240	150	190
176.	PLANTAIN, green	0.22	260	280	350	040	280	—	040	—	170	340	320	280
178.	PUMPKIN	0.2	230	100	270	070	210	—	050	—	170	330	230	300
185.	TOMATO, green	0.30	190	050	160	020	150	—	050	—	190	210	420	270
NUTS AND OILSEEDS														
189.	ALMOND	3.33	660	140	160	050	300	180	100	050	170	450	250	310
192.	CASHEW NUT	3.39	650	130	290	110	270	—	090	—	200	510	320	360
194.	COCONUT, dry	1.09	850	130	240	070	280	170	100	080	180	430	240	320
201.	GINGELLY SEEDS	2.93	750	170	170	080	370	230	180	120	230	500	250	290
202.	GROUND NUT	4.05	690	140	230	060	310	240	060	080	170	400	240	280
205.	LINSEED	3.25	560	120	230	100	270	180	100	120	210	360	310	320
207.	NIGER SEED	3.82	660	140	230	—	300	—	090	100	210	380	250	320
208.	PISTACHIO NUT	3.17	590	140	320	060	320	190	080	110	200	550	300	370
209.	PIYAL SEEDS	3.04	1230	170	240	070	330	—	100	—	200	740	350	410
211.	SUNFLOWER SEEDS	3.17	500	150	230	090	280	120	120	090	230	400	270	320
212.	WALNUT	2.50	770	120	100	060	260	—	080	—	170	470	240	280
213.	WATER MELON SEEDS	5.46	900	130	170	090	270	—	160	—	140	400	310	260

Sl. No.	Name of the foodstuff	Approximate total N g/100 gms.	mg. per gm N											
			Argi- nine	Histi- dine	Lysine	Trypto- phan	Phenyl- alanine	Tyro- sine	Methio- nine	Cys- tine	Threo- nine	Leu- cine	Isoleu- cine	Valine
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
FRUITS														
240. APPLE		0.03	170	120	370	060	160	090	050	080	230	390	220	250
241. APRICOT		0.16	080	100	180	—	100	080	030	—	130	180	110	150
243. AVOCADO														
PEAR		0.27	210	110	310	060	220	140	090	—	180	340	210	290
245. BANANA		0.19	360	370	270	070	260	160	080	170	190	320	250	260
254. DATES		0.40	150	050	190	—	170	050	050	120	180	260	150	220
256. FIGS		0.21	140	090	250	050	150	270	050	100	200	270	190	240
258. GRAPES		0.08	460	230	140	030	130	110	210	100	170	130	050	170
261. GUAVA														
COUNTRY		0.14	—	—	190	060	—	—	060	—	—	—	—	—
278. MANGO RIPE		0.10	—	—	830	130	—	—	070	—	—	—	—	—
287. PAPAYA		0.10	—	—	400	130	—	—	030	—	—	—	—	—
290. PEACHES		0.19	130	130	230	030	140	160	240	070	210	220	100	310
292. PERSIMMON		0.11	360	130	320	110	290	150	060	150	380	400	280	290
305. STRAW BERRY		0.11	270	120	250	070	180	210	010	050	190	320	140	180
OTHER FLESH FOODS														
398. BEEF		3.60	410	200	540	070	260	220	160	080	280	510	320	330
402. EGG, hen		2.13	400	150	440	090	360	250	210	140	320	520	410	450
405. FOWL		4.14	350	160	500	060	250	210	160	080	250	460	330	320
410. MUTTON		2.96	430	170	510	080	250	210	150	080	290	480	310	320
412. PORK		2.99	410	190	570	090	280	230	180	080	310	520	340	360
MILK AND MILK PRODUCTS														
419. MILK, buffalo's		0.69	200	130	490	090	270	—	170	090	300	640	330	380
420. MILK, cow's		0.51	220	170	500	090	320	300	160	050	280	600	340	400
421. MILK, goat's		0.53	210	180	470	080	240	200	110	—	350	560	250	340
422. MILK, human		0.18	250	170	420	110	230	230	100	110	290	520	330	310
423. CURD		0.50	200	160	480	080	330	370	170	060	310	680	320	470
428. CHEESE		3.86	240	200	520	080	350	340	180	040	260	640	360	480
433. WHOLE MILK POWDER		4.13	220	180	490	090	310	300	170	050	280	630	360	420
591. YEAST, dried (Brewers)		6.32	310	160	570	—	300	260	100	060	350	500	370	460

TABLE-8
ESSENTIAL AMINO ACIDS: LESS FAMILIAR FOODS

Sl. No.	Name of the foodstuff	Approximate total N g/ 100 gms.	Argi-	Histi-	Lysine	Trypto-	Phenyl-	Tyro-	Methio-	Cys-	Threo-	Leu-	Isoleu-	Valine
			nine	dine	alanine	phan	alanine	sine	nine	tine	nine	cine	cine	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
CEREAL GRAINS AND PRODUCTS														
452. AMARANTH														
SEEDS		—	560	121	301	59	273	236	111	—	275	403	211	241
453. BAMBOO														
SEEDS		2.96	560	130	290	050	270	200	110	130	230	480	310	370
454. BANTI		1.33	—	—	180	030	200	—	120	—	140	1040	550	400
455. BUCKWHEAT		1.65	570	130	300	080	240	140	100	110	220	380	240	370
456. CHENOPO-														
DIUM ALBUM														
SEEDS		—	440	170	337	054	470	172	112	040	429	402	195	246
459. JOB'S TEARS		2.80	270	130	130	030	300	270	160	110	200	1020	300	360
460. OAT MEAL		2.18	390	110	230	080	300	210	100	090	200	440	270	330
466. GOA BEANS		—	381	186	475	—	325	312	068	—	287	—	306	331
GOA BEAN														
(tuber)		—	275	103	318	—	306	212	162	—	325	—	262	343
467. MALMANDI		—	1544	244	445	—	260	064	053	—	307	535	293	319
505. VELAI KEERAI														
(defatted seed														
cake)		—	115	027	031	005	052	025	014	—	038	071	037	053
MISCELLANEOUS FOOD STUFFS														
544. ADDA SEEDS	4.37	530	090	260	050	200	—	060	—	190	410	260	260	
552. OKRA (whole														
seed)		—	860	220	580	110	250	180	140	—	220	450	260	360
553. OKRA (kernal)		—	850	200	540	120	290	200	130	230	—	490	250	300
555. MARKINGNUT														
kernel	4.22	600	110	260	060	220	—	090	—	130	460	270	300	

TABLE-9
FATTY ACID COMPOSITION OF SOME IMPORTANT EDIBLE OILS AND FATS
 (Values are percentage of total methylester of fatty acid)

Sl. No.	Oil Fats	Palmi- tic	Stearic	Arachi- dic	Bethenic	Ligno- seric	Total Saturates	Palmi- toleic	Oleic	Lino- leic	Lino- lenic	Total
		16:0	18:0	20:0	22:0	24:0		16:1	18:1	18:2	18:3	Unsatu- rates
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1.	COCONUT OIL	7.8	2.3	—	—	—	87.9*	—	7.8	0.8	—	8.6
2.	CORN OIL	10.7	1.7	—	—	—	12.7	—	24.6	57.4	—	83.0
3.	COTTON SEED OIL	23.4	1.1	1.3	—	0.1	25.9	—	22.9	47.8	—	70.7
4.	GROUNDNUT OIL	12.6	1.7	4.2	2.1	0.3	20.9	1.4	47.9	29.9	—	79.1
5.	MUSTARD or RAPESEED OIL	2.9	0.9	6.9	—	—	10.7	0.6	8.9	18.1	14.5	88.6**
6.	OLIVE OIL	11.5	2.3	—	—	—	14.2	—	71.5	8.2	—	81.4
7.	PALM OIL	42.0	4.3	—	—	—	47.9	—	37.9	9.0	—	47.7
8.	PALMOLEIN	42.3	3.5	—	—	—	47.7	0.4	41.0	10.3	0.3	52.0
9.	RICE BRAN OIL	16.5	1.6	—	—	—	19.5	—	39.2	33.3	—	74.6
10.	SAFLOWER OIL	7.8	2.1	0.8	—	—	10.7	—	17.7	78.5	—	92.2
11.	SESAME OIL	9.7	3.4	—	—	—	13.4	0.1	41.2	44.5	—	86.5
12.	SOYABEAN OIL	9.8	2.4	0.9	—	—	13.1	—	28.9	50.7	6.5	86.1
13.	SUNFLOWER OIL	5.6	2.2	0.9	—	0.4	9.1	—	25.1	66.2	—	81.3
14.	BUTTER	21.1	9.7	—	—	—	49.8*	—	20.1	1.8	—	—
15.	LARD	23.7	13.0	—	—	—	39.6	—	40.9	10.0	—	56.1
16.	TALLOW	24.6	18.7	—	—	—	48.2	—	36.0	3.7	—	46.5

* Includes lower chain fatty acid

** Includes 46.5% of Erucic acid (22:1)

TABLE 10
VITAMIN B₁₂ CONTENT OF FOODS
 ug. per 100 grams edible portion

Sl. No.	Name of the foodstuff	Vitamin B ₁₂	Sl. No.	Name of the foodstuff	Vitamin B ₁₂
(1)	(2)	(3)	(1)	(2)	(3)
FISHES					
359.	MRIGAL	1.4	555.	LIVER, sheep	91.9
381.	SHRIMP, fresh	9.0	556.	MUTTON	2.6
OTHER FLESH FOODS					
399.	BUFFALO meat	1.7	567.	MILK, buffalo	0.14
402.	EGG, hen, whole	1.8	568.	MILK, cow	0.14
	EGG, white (hen)	0.2	569.	MILK, goat	0.05
	EGG, yolk (hen)	4.4	570.	MILK, human	0.02
406.	GOAT meat	2.8	572.	CURD, buffalo milk	0.10
408.	LIVER, goat	90.4		CURD, cow milk	0.13
			582.	SKIM MILK POWDER	0.83
MILK AND MILK PRODUCTS					

TABLE 11
OXALIC ACID, PHYTIN PHOSPHORUS AND DIETARY FIBRE IN FOODS

Sl. No.	Name of the foodstuff	Oxalic acid	Phytin P	Phytin P as percent of total P	Total Dietary Fibre
		mg/100 gms.	(4)	(5)	(6)
(1)	(2)	(3)			
CEREAL GRAINS AND PRODUCTS					
1. BAJRA		21	141	48	—
2. BARLEY		2	101	47	—
3. ITALIAN MILLET		0	198	68	24.71
4. JOWAR		10	172	77	12.69
5. MAIZE, dry		6	306	85	—
6. MAIZE, tender		9	66	55	—
7. PANIVARAGU		0	83	40	30.48
8. RAGI		0	209	74	19.08
10. RICE, parboiled, milled		1	83	58	—
12. RICE, raw, milled		3	83	52	—
14. RICE, flakes		0	151	63	—
15. RICE, puffed		0	47	31	—
16. SAMAI, (whole)		0	57	26	38.93
18. VARAGU, (whole)		0	135	72	37.76
19. WHEAT, bulgar		7	198	67	—
20. WHEAT, whole		8	238	80	11.40
22. WHEAT, flour (refined)		0	38	81	—
25. WHEAT, vermicelli		0	19	21	—
PULSES AND LEGUMES					
28. BENGAL GRAM, (whole)		2	158	51	—
29. BENGAL GRAM, dhal		5	133	40	—
30. BENGAL GRAM, roasted, dehusked		3	159	47	—
BLACK GRAM, (whole)		—	—	—	16.54
31. BLACK GRAM, dhal		16	169	43	—
32. COW PEA		9	185	45	—
33. FIELD BEAN, dry		—	248	57	—
34. GREEN GRAM, (whole)		3	148	46	9.75
35. GREEN GRAM, dhal		1	209	52	—
36. HORSE GRAM,		417	114	37	—
37. Khesari dhal		122	108	31	10.44
38. LENTIL		14	100	34	—
39. MOTH BEANS		0	25	11	—
40. PEAS		14	55	40	—
41. PEAS, dry		0	135	45	—
42. PEAS, roasted		0	136	40	—
44. RED GRAM, dhal		9	170	56	—
RED GRAM, whole		—	—	—	10.26
45. RED GRAM, tender		16	—	—	—

Sl. No.	Name of the foodstuff	Oxalic acid	Phytin P	Phytin P as percent of total P	Total Dietary Fibre
		mg/100 gms.	(4)		
(1)	(2)	(3)	(4)	(5)	(6)
LEAFY VEGETABLES					
49.	AMARANTH, tender	772	2	3	—
65.	BRUSSELS SPROUTS	4	5	6	—
66.	CABBAGE	3	3	7	—
69.	CELERY LEAVES	37	6	4	—
70.	CELERY STALK	30	1	3	—
73.	COLOCASIA LEAVES (green variety)	43	0	0	—
75.	CORIANDER LEAVES	47	0	0	—
77.	CURRY LEAVES	132	35	61	—
78.	DRUMSTICK LEAVES	101	44	63	—
79.	FENUGREEK LEAVES	13	0	0	—
84.	GOGU	148	—	—	—
94.	MINT	33	4	6	—
99.	PARSLEY	—	16	9	—
100.	PARUPPU KEERAI	1,679	4	9	—
108.	SAFFLOWER LEAVES	3	—	—	—
110.	SPINACH	658	0	0	—
111.	SPINACH STALK	1	—	—	—
113.	TAMARIND LEAVES, tender	196	0	0	—
ROOTS AND TUBERS					
117.	BEET ROOT	40	0	0	—
118.	CARROT	5	0	0	—
122.	ONION, big	1	—	—	—
123.	ONION, small	1	—	—	—
124.	PARSNIP	20	4	10	—
125.	POTATO	20	14	35	10.16
126.	RADISH, pink	20	13	65	—
129.	RADISH, white	9	0	0	—
130.	SWEET POTATO	—	—	—	13.04
131.	TAPIOCA	17	—	—	—
132.	TAPIOCA CHIPS, dried	31	17	24	—
134.	YAM, (elephant)	—	4	12	—
136.	YAM, (wild)	15	7	9	—
OTHER VEGETABLES					
139.	BITTER GOURD	0	4	6	—
140.	BITTER GOURD, small variety	0	26	19	—
142.	BRINJAL	18	3	6	—
143.	BROAD BEANS	1	—	—	—
144.	CAULIFLOWER	19	10	18	—
146.	CLUSTER BEANS	—	3	6	—
149.	CUCUMBER	15	0	0	—
150.	DOUBLE BEANS	—	8	5	—
151.	DRUM STICK	101	44	40	—

Sl No.	Name of the foodstuff	Oxalic acid	Phytin P	Phytin P as percent of total P	Total Dietary Fibre
		mg/100 gms.	(4)		
(1)	(2)	(3)	(4)	(5)	(6)
153.	FIELD BEANS, tender	1	—	—	—
155.	FRENCH BEANS	33	0	0	—
159.	JACK FRUIT seeds	4	40	42	—
165.	KNOL—KHOL	10	0	0	—
166.	LADIES FINGERS	8	0	0	—
169.	LOTUS STEM, dry	422	0	0	—
170.	MANGO, green	6	5	26	—
171.	ONION STALKS	14	19	38	—
173.	PARWAR	7	8	20	—
174.	PINK BEANS	—	38	54	—
175.	PLANTAIN FLOWER	420	—	—	—
176.	PLANTAIN GREEN	480	11	37	—
180.	RIDGE GOURD	27	11	28	—
181.	SNAKE GOURD	34	0	0	—
184.	TINDA, tender	2	—	—	—
185.	TOMATO, green	2	0	0	—
186.	VEGETABLE MARROW	56	—	—	—
NUTS AND OIL SEEDS					
189.	ALMOND	407	—	—	—
192.	CASHEWNUT	318	—	—	—
199.	COCONUT MEAL DEOILED	—	285	44	—
200.	GARDEN CRESS SEEDS	149	442	61	—
201.	GINGELLY SEEDS	1,700	—	—	—
209.	PIYAL SEEDS	2	158	30	—
210.	SAFFLOWER CAKE (defatted)	—	—	—	24.80
CONDIMENTS AND SPICES					
214.	ARISITHIPPILI	—	56	17	—
217.	CHILLIES, dry	—	71	19	—
218.	CHILLIES, green	67	7	9	—
221.	CORIANDER	—	320	81	—
222.	CUMIN SEEDS	—	153	30	—
223.	FENUGREEK SEEDS	—	151	41	—
231.	OMUM	—	296	67	—
232.	PEPPER, dry	—	115	58	—
237.	TURMERIC	—	97	34	—
FRUITS					
239.	AMLA	296	—	—	—
240.	APPLE	10	0	0	—
245.	BANANA RIPE	—	4	10	—
250.	CAPE GOOSEBERRY	1	18	27	—
261.	GUAVA, country	14	15	54	—
264.	JACK FRUIT	27	17	41	—

Sl. No.	Name of the foodstuff	Oxalic acid	Phytin P	Phytin P as percent of total P	Total Dietary Fibre
		mg/ 100 gms.	(4)		
(1)	(2)	(3)	(4)	(5)	(6)
266.	JAMBU FRUIT	89	2	13	—
271.	LICHI	19	—	—	—
278.	MANGO RIPE	26	—	—	—
280.	MELON, musk	2	—	—	—
281.	MELON, water	11	—	—	—
283.	ORANGE	10	1	5	—
287.	PAPAYA, ripe	1	4	31	—
290.	PEACHES	1	1	2	—
291.	PEARS	4	1	10	—
293.	PHALSA	200	13	33	—
294.	PINEAPPLE	5	2	22	—
295.	PLUM	1	0	0	—
296.	POMEGRANATE	14	11	28	—
304.	SEETHAPHAL	30	—	—	—
306.	TOMATO ripe	4	—	—	—
307.	TOMATILLO	0	7	18	—
308.	TREE TOMATO	1	6	13	—
FISHES AND OTHER SEA FOODS					
377.	ROHU	5	18	10	—
OTHER FLESH FOODS					
397.	BEEF MEAL	—	90	28	—
398.	BEEF MUSCLE	25	—	—	—
410.	MUTTON	7	—	—	—
MILK AND MILK PRODUCTS					
420.	MILK, cow's	2	—	—	—
MISCELLANEOUS FOOD STUFFS					
454.	BANTI (whole)	—	—	—	31.06
455.	BUCK WHEAT	—	322	91	—
464.	RAJKEERA SEEDS	29	—	—	12.72
469.	BAMBOO, tender shoots	2	—	—	—
545.	JUNGLI BADAM	0	197	48	—
582.	THAVITTUPAZHAM	42	11	73	—
584.	VIKKIPAZHAM	272	—	—	—

APPENDIX—I

Recommended Dietary Allowances for Indians

The Nutrition Advisory Committee of Indian Research Fund Association, now Indian Council of Medical Research recommended for the first time, dietary allowances for Indians of energy, proteins, iron, calcium, vit. A, thiamine, ascorbic acid and vitamin D. These recommendations were revised in 1958 in respect of energy and protein. The nutrition Expert Group of the Indian Council of Medical Research revised in 1968 the earlier recommendations of nutrient allowances for Indians in respect of all nutrients, except energy. This Committee also considered the desirable levels of intake of additional nutrients like folic acid Vit. B₁₂, vitamin D and fat. In making these recommendations, the committee was guided by the safe allowances of various nutrients suggested by the experts groups of the Food and Agricultural Organisations and the World Health Organization and data on nutrient requirement of Indians. These recommendations were again revised in 1978 by an Expert Group of the ICMR and allowances were up-dated and revised in respect of several nutrients. Nutrient allowances for Indians were again examined in detail by an Expert Committee of the ICMR in April 1988 and detailed recommendations with respect to safe levels of intake of all nutrients were made. The basis of these recommendations is discussed in detail in the Report of the Committee. Here the recommended intakes are given in Table and the main point on which they are based and guidelines to use them are described below briefly.

1. Body weight.

- (a) **Reference man and women:** On the basis of height of Indian adult, body weight of 60 kg and 50 kg for reference man and reference woman should be used in arriving at RDA, instead of 55 kg and 40 kg used earlier.
- (b) In case of growing infants and children desirable body weights are to be used. In the absence of Indian data NCHS standards will be used for the time being.

2. Energy allowances:

- (a) Energy requirement is expressed in terms of BMR values which are derived from the

body weight of Indians using the equation given by FAO, 1980 and the values reduced by 5% to allow for the lower BMR of Indians.

- (b) Energy allowance for children and adolescents are for normally growing healthy Indian children. Allowance is made for the age and no correction for actual body weight of children need to be made.
- 3. **Protein allowances:** Protein allowances are given in terms of mixed vegetable proteins contained in Indian diets, the NPU of which is assumed to be 65. Adult protein requirement is 1 g/kg.
- 4. **Fat requirement:** For requirement was examined in great details and more realistic estimates of minimum intakes have been given. In arriving at fat requirements, the total invisible fat content of cereal based diets eaten in India and the minimum EFA requirement of various groups were considered.

5. Minerals:

Iron requirements have been arrived at using the factorial approach taking into account the basal loss in case of men, basal loss + menstrual loss in case of women, basal loss + growth requirement in case of children. Dietary iron requirement are given at levels of absorption of 5%, 3% and 2%. Applicable respectively to the diet based on rice, based on mixed cereals (Rice + wheat) and based wholly on wheat or millets.

Calcium and phosphorus: Because of close relationship between Ca and P, allowances for both these nutrients are given. The desirable ratio of Ca:P is 1:5 in case of infants and 1:1 in case of other groups.

Trace elements: Desirable daily intakes of some trace element have been suggested for an adult: chromium 65 μ g, copper 2.2 mg and manganese 5.5 mg, zinc 15.5 mg and molybdenum 500 μ g.

6. Vitamins:

Vitamin A: The recommended level of vitamin A (retinol) for adult is 600 μ g. In terms of

betacarotene it will be 2400 μg , the conversion factors to be used in case of retinol and beta-carotene is as follows:

1 μg beta-carotene = 0.25 μg retinol. If diet contains both retinol and beta-carotene, its vitamin A content can be expressed as follows.

- (a) Retinol content (μg) = μg Retinol + μg beta-carotene $\times 0.25$, if retinol and beta-carotene are expressed in μg .
- (b) Retinol content (μg) = Vitamin A IU $\times 0.3$ + beta-carotene IU $\times 0.15$, if vitamin A and beta-carotene are given in International Units (IU).

Thiamine, riboflavin and nicotinic acid.

The daily allowances for these vitamins are related to energy intake. The basic allowances per 1000 kcal are: Thiamine 0.5, riboflavin 0.6 mg and nicotinic acid 6.6 mg niacin equivalent.

Niacin allowance takes into account the contribution of tryptophan also, assuming 60 mg dietary tryptophan, yielded 1 mg of niacin in the body

Niacin equivalents =

$$\text{Niacin content} + \frac{\text{tryptophan content}}{60} \text{ (mg)}$$

Folic acid

Allowance for folic acid is in terms of free folate (L. Casei activity) present in foods. RDA of folate in pregnancy will 300 μg , in addition to normal requirement of 100 μg since such high levels of folate cannot be obtained therapeutic supplementation becomes necessary in pregnancy. Folic acid requirement can be expressed on the basis of body weight also i.e., 3 $\mu\text{g}/\text{kg}$.

B₁₂: Recommended intake of B₁₂ is 1 $\mu\text{g}/\text{day}$ entirely derived from animal foods. This provides justification for including some animal foods in our daily diet.

Vitamin C: Earlier recommendations of 40 mg was retained. In case of infants, the RDA was changed from 20 to 25 mg/day.

Vitamin D: No dietary recommendations for vit. D was made since adequate vitamin D can be obtained through exposure to sunlight. In case of conditions inadequacy of vitamin D medicinal supplements can be given.

Vitamin E: An intake of 0.8 mg. of Vit. E per g of polyunsaturated fatty acids was suggested.

Vitamin B₆: Earlier (1978) recommendations were retained.

RECOMMENDED DIETARY ALLOWANCES FOR INDIANS

Group	Particulars	Body wt	Net energy	Protein	Fat	Cal-cium	Iron	Vit. A. $\mu\text{g}/\text{d}$		Thia-min	Ribo-flavin	Nico-tinic acid	Ascor-bic acid	Folic acid	Vit. B-12
								Retinol	β -caro-tene						
Man	Sedentary work	2425		20	400	28	600	2400	1.4	1.2	1.4	16	40	100	1
	Moderate work	2875	3800	60						1.6	1.6	18	2.0		
	Heavy work									1.9	1.9	21			
Woman	Sedentary work	1875		20	400	30	600	2400	1.1	0.9	1.1	12			
	Moderate work	2225	2925	50						1.1	1.1	14	2.0	40	100
	Heavy work									1.3	1.2	1.5	16		1
	Pregnant woman	50	+300	15	30	1000	38	600	2400	+0.2	+0.2	+0.2	+2	2.5	400
	Lactation													400	1
	0-6 months	50	+550	+25	45	1000	30	950	3800	+0.3	+0.3	+0.3	+4		
Infants	6-12 months	50	+400	+18						+0.2	+0.2	+0.2	+3	2.5	80
	0-6 months	5.4	108/kg	2.05/kg										150	1.5
	6-12 months	8.6	98/kg	1.65/kg											
Children	0-6 months	500												25	0.2
	1-3 years	12.2	1240	22											
	4-6 years	19.0	1690	30	25	400	18	400	1600	0.6	0.6	0.7	8	0.9	30
	7-9 years	26.9	1950	41						0.9	0.9	1.0	11	40	40
Boys	10-12 years	35.4	2190	54	22	600	34	600	2400	1.0	1.0	1.2	13	1.6	60
	Girls	31.5	1970	57											
Boys	13-15 years	47.8	2450	70	22	600	41	600	2400	1.1	1.1	1.3	15	40	70
	Girls	46.7	2060	65											
Boys	16-18 years	57.1	2640	78	22	500	50	600	2400	1.3	1.3	1.6	17	40	100
	Girls	49.9	2060	63											

APPENDIX II

NAMES OF FOODSTUFFS IN INDIAN LANGUAGES

The following abbreviations have been used in this Appendix

A-Assamese; B-Bengali; G-Gujarati; H-Hindi;
Kan-Kannada; Kash-Kashmiri; Mal-Malayalam;

Mar-Marathi; O-Oriya; P-Punjabi; Tam-Tamil;
Tel-Telugu.

CEREAL GRAINS AND PRODUCTS

1. Bajra: *Pennisetum typhoideum*

B., H., O. *Bajra*; G., Mar., *Bajri*; Kan. *Sajje*; Kash. *Bajru*; Mal., Tam. *Cambu*; Tel. *Sazzalu*. Other names: Spiked millet, Pearl millet.

2. Barley: *Hordeum vulgare*

B. *Job*; G., H., Mar. *Jau*; Kan. *Jave godhi*; Kash. *Wushku*; Mal. *Yavam*; O. *Jaba dhana*; Tam. *Barli arisi*; Tel. *Barli biyyam*. Other name: *Yava*.

3. Italian millet: *Setaria italica*

B. *Syama dhan*; G. *Ral kang*; H., P. *Kangni*; Kan. *Priyangu thene*; Kash. *Shol*; Mal. *Thina*; Mar. *Rala*; Tam. *Thenai*; Tel. *Korralu*; Other names: Foxtail millet; Moha millet; Kakan kora; Chinka.

4. Jowar: *Sorghum vulgare*

B., G., H. *Juar*; Kan. *Jola*; Mal., Tam. *Cholam*; Mar. *Jwari*; O. *Janha*; Tel. *Jonnalu*; Other names: Milo, Chari.

5,6. Maize: *Zea mays*

B. *Bhutta*; G. *Makai*; H., Mar., O. *Maka*; Kan. *Musikinu Jola*; Kash. *Makaa 'Y*; Mal. *Cholam*; Tam. *Makka cholam*; Tel. *Mokka jonnalu*.

7. Panivaragu: *Panicum miliaceum*

O. *Chinna*; G., Mar. *Vari*; Kan. *Baragu*; Kash. *Pingu*; Mal., Tam. *Panivaragu*; Tel. *Varagalu*; Other names: French millet.

8. Ragi: *Eleusine Coracana*

B., H. *Madua*; G. *Bhav*; Kan. *Ragi*; Mal. *Moothari*; Mar. *Nachni*; O. *Mandia*; Tam. *Kezhvaragu*; Tel. *Ragulu*; Other names: Finger millet; Korakan; Rajika.

9,10. Rice, Parboiled: *Oryza sativa*

B. *Siddha chowl*; G. *Ukadello chokha*; H. *Usnachawal*; Kan. *Kusubalakki*; Mal. *Puzhungal ari*; Mar. *Ukada tondool*; O. *Usuna chaula*; Tam. *Puzhungal arisi*; Tel. *Uppudu biyyam*.

11,12. Rice, raw: *Oryza sativa*

B. *Chowl*; G. *Chokha*; H. *Chawal*; Kan. *Akki*; Kash. *Tomul*; Mal. *Ari*; Mar. *Tondool*; O. *Chaula*; Tam. *Arisi*; Tel. *Biyyam*.

13. Rice bran: *Oryza sativa*

B. *Goora*; Kan., Mal., Tam., Tel. *Thavudu*; Mar. *Konda*.

14. Rice flakes: *Oryza sativa*

B. *Chira*; G., Mar. *Pohe*; H. *Chewra*; Kan. *Avalakki*; Mal., Tam. *Aval*; O. *Chuda*; Tel. *Atukulu*.

15. Rice, puffed: *Oryza sativa*

B. *Mudi*; G., H., Mar., *Murrmura*; Kan., Mal., Tam. *Pori*; O. *Mudhi*; Tel. *Murmuralu*.

16. Samai: *Panicum miliare*

B. *Kangni*; G. *Gadro*; H. *Kutki*; Kan., Tam. *Samai*; Kash. *Ganuhaar*; Mal. *Chama*; Mar. *Sava*; O. *Suan*; Other names: Goudli; Gondola.

17. Sanwa millet: *Echinochloa frumentacea*

B. *Shamula*; G. *Sama*; H. *Shama*; Kan. *Samai*; Mar. *Shamul*; Tam. *Kudirai valu*; Tel. *Bonta Chamalu*; Other names: Sawank; Shyama.

18. Varagu: *Paspalum scrobiculatum*

B. *Kodoadhan*; G., H. *Kodra*; Kan. *Haraka*; Mal., Tam. *Varagu*; Mar. *Harik*; O. *Kodus*; Tel. *Arikalu*; Other names: Pakodi, Manakodra.

19. Wheat, Bulgar: **Triticum aestivum**

20. Wheat: **Triticum aestivum**
B. *Gom*; G. *Ghau*; H. *Gehun*; Kan. *Godhi*; Kash. *Ku'nu'kh*; Mal. *Gendum*; Mar. *Gahu*; O. *Gahama*; P. *Kamak*; Tam. *Godumai*; Tel. *Godhumalu*.

21. Wheat, Flour, Whole: **Triticum aestivum**
B., H., O. *Atta*; G. *Ato*; Kan. *Godhi hittu*; Mal. *Gothambu mavu*; Mar. *Kaneek*; Tam. *Godumai mavu*; Tel. *Godhuma Pindi*.

22. Wheat flour, refined: **Triticum aestivum**
B., H., Kan., Mar., O. *Maida*; Mal., Tam. *Maida mavu*; Tel. *Maida pindi*; Other names: American mavu.

23. Wheat germ: **Triticum aestivum**
Tam. *Godumai mulai*.

24. Semolina: **Triticum aestivum**
B., H. *Sooji*; Kan., Mar., Mal., Tel. *Rava*; Tam. *Ravai*; Other names: Broken wheat, cream of wheat.

25. Vermicelli: **Triticum aestivum**
B. *Semai* H. *Siwain*; Kan. *Shevige*; Mal., Tam., Tel. *Somiya*; Mar. *Shevaya*; O. *Simai*.

26,27. Bread
B.H. *Roti*, Other name: Double roti.

31. Black gram dhal: **Phaseolus mungo roxb.**
B. *Mashkalair dal*; G. *Udad*; H. *Urd dal*; Kan. *Uddina bele*; Kash. *Maha*; Mal. *Uzhunnu parippu*; Mar. *Uddachi dal*; O. *Biri*; P. *Mahdi-dhal*; Tam. *Ulutham paruppu*; Tel. *Minapa pappu*.

32. Cow pea: **Vigna catjang**
B. *Barbati*; G. *Chorap*; H. *Lobia*; Kan. *Alasande*; Mal. *Vella payaru*; Mar. *Chavli*; O. *Chani*; Tam. *Karamani*; Tel. *Bobbarlu*; Other name: Nishapana.

33. Field bean: **Dolichos lablab**
B. *Sim*; G. *Valpapdi*; H. *Sem*; Kan. *Avare*; Kash. *Moang*; Mal. *Avara*; O. *Baragudi*; Mar. *Papta*; Tam. *Mochai*; Tel. *Chikkudu*; Other names: Kadumal; Hyacinth bean.

34. Green gram (whole): **Phaseolus aureus Roxb.**
B., H. *Mung*; G. *Mag*; Kan. *Hesare kalu*; Kash. *Muang*; Mal. *Cheru payaru*; Mar. *Mug*; O. *Muga*; P. *Moongi*; Tam. *Pasipayir*; Tel. *Pesalu*.

35. Green gram dhal: **Phaseolus aureus Roxb**
B.K., *Mung dal*; Mar. *Mug dal*; Kan. *Hesara bele*; Mal. *Cheru payar parippu*; P. *Mungi-di-dal*; Tam. *Payatham-paruppu*; Tel. *pesara-pappu*.

36. Horse gram: **Dolichos biflorus**:
B. *Kulthi-kalai*; G. *Kalathi*; H. *Kulthi*; Kan. *Hurule*; Mal. *Muthira*; Mar. *Kuleeth*; O. *Kolatha*; Tam. *Kollu* Tel. *Ulavalu*.

37. Khesari dhal: **Lathyrus sativus**
B., H., O. *Khesari dal*; G., Mar. *Lakh dal*; Mal. *Vattu parippu*; Tam. *Khesari paruppu*; Tel. *Lanka pappu*.

38. Lentil: **Lens esculenta**
A. *Masurmoha*; B. *Masoor*; G., H., Mar. *Masur dal*; Kan. *Masur bele*; Kash. *Musur*; Mal. *Masur parippu*; O. *Masura*; P. *Masur*; Tam. *Mysore paruppu*; Tel. *Misur pappu*.

39. Moth beans: **Phaseolus aconitifolius, Jacq.**
B. *Kheri*; G. *Mut*; H. *Moth*; Mar. *Matki*; P. *Bhioni*; Tam. *Narippayir*; Other names: Dew gram; Aconite bean.

PULSES AND LEGUMES

28. Bengal gram (whole): **Cicer arietinum**
B. *Chola*; G., H. *Chana*; Kan. *Kandale*; Kash. *Chanu*; Mal. *Kadala*; Mar. *Harbara*; O. *Buta*; P. *Chole*; Tam. *Kothukadalai*; Tel. *Sanagalu*; Other names: Chick pea; Garbanzo; Chanaka.

29. Bengal gram dhal: **Cicer arietinum**
B. *Cholar dal*; H. *Chane-ki-dhal*, Kan. *Kadale bele*; Kash. *Choladal*; Mal. *Kadala parippu*; Mar. *Harbara dal*; Tam. *Kadalai paruppu*; Tel. *Sanaga pappu*.

30. Bengal gram, roasted: **Cicer arietinum**
B. *Chola bhaja*; G., Mar. *Phutana*; H. *Bhuna Chana*; Kan. *Hurikadale*; Mal. *Varutu Kadala*; O. *Bhajabuta*; Tam. *Pottukadalai*; Tel. *Putnala Pappu*.

40,41,42. Peas: **Pisum sativum**
 B., H. Matar; G., Mar. Vatana; Kan., Tel. Batani; Kash. Kara; Mal., Tam. Pattani; O. Matara.

43. Rajmah; **Phaseolus vulgaris**
 B. Barbat; G. Phanasi; H. Rajmah; Kash. Raazmaha; Kan. Tingalanari; Mar. Shravangheveda; Tel. Barigalu; Other name: French beans (dry).

44,45. Red Gram dhal: **Cajanus cajan**
 B., H., Kash. Arhar dal; G. Tuver; Kan. Thugare bele; Mal. Tuvara parippu; Mar. Turdal; O. Harada; Tam. Tuvaram paruppu; Tel. Kandi pappu; Other names: Pigeon pea, Adhaki, Tuvari, Tuvarika.

46. Soya bean: **Glycine max Merr.**
 B. Garikalai; H. Bhatmas; Kash. Muth.

LEAFY VEGETABLES

47. Agathi: **Sesbania grandiflora**
 B. Bak; G. Agathio; H., Mar., O. Agasti; Kan. Agase; Mal., Tam. Agathi; Tel. Avise; Other names: Basna; Agathi.

48. Love-Lies-Bleeding: **Amaranthus Caudatus**
 B. Natesag; G. Chuko; H. Gendhri sag; Tam. Pungi Keerai; Tel. Keikeera.

49. Amaranth, tender: **Amaranthus gangeticus**
 B. Notya; H. Chaulai sag; Kan. Dantu; Mal. Cheera; Mar. Math; Tam. Thandukeerai; Tel. Thotakoora; Other names: Gogta sag, Arikisira.

50. Amaranth stem: **Amaranthus gangeticus**
 B. Nate danta; H. Cholai-ki-dandi; Kan. Dantu; Mal. Cheru cheera thandu; Mar. Matha-chedeth; O. Khada; Tam. Keera thandu; Tel. Thotakoora kadai; Other names: Arkisira.

51. Rajagira leaves: **Amaranthus paniculatus**
 Tam. Rajakeerai

52. Sirukeerai: **Amaranthus polygonoides**
 Tam. Sirukeerai.

53. Amaranth, spined: **Amaranthus spinosus**
 B. Kanta-notya; G. Kantalo dadho; H. Kantewali Chaulai; Kan. Mulla dantu; Mal. Mullancheru-cheera; Mar. Kante-math; O. Kanta neutia sag; Tam. Mulla keerai; Tel. Mulla thotakoora Other names: Gendari sag; Tanduliya.

54. Chakravarthi keerai: **Amaranthus sp.**
 Tam. Chakravarthi keerai

55. Koyakeerai: **Amaranthus sp.**
 Tam. Koyakeerai

56. Araikeerai: **Amaranthus tristis**
 B. Champanutiya; H. Chumli sag; Tam. Araikeerai; Tel. Sirru.

57. Kuppakeerai: **Amaranthus vindis**
 Tam. Kuppa Keerai.

58. Ambat Chuka: **Rumex vesicarius**
 B. Chuka palang; H. Chuka; Kash. O'bej; Kan. Sukkisoppu, Mar. Ambat chuka, Tam. Chukka Keerai; Tel. Chukka Koora; Other names: Khatti palak.

59. Bathua leaves: **Chenopodium album**
 B. Beto sag; G. Chilni bhaji; H., P. Bathua sag; Kan. Sakothina soppu; Mar. Chandan bathua; O. Bathua saga.

60. Beet greens: **Beta vulgaris**
 H. Chukandar-ka-sag.

61. Bengal gram leaves: **Cicer arietinum**
 B. Chola sag; G. Chanapan; H. Chana sag; Kan. Kadale soppu; Mal. Kadala ilagal; Mar. Harbara pan; O. Chana saga; P. Chholianda sag; Tam. Kadalai ilaigal; Tel. Sanaga akulu.

62. Betel leaves: **Piper betle**
 B. Pan; G. Nagarvelna pan; H. Pan-ka-pata; Kan. Vilaidyele; Mal., Tam. Vettiai; O. Pana; P. Pan-da-patta; Tel. Thamala-paku; Other names: Tambula.

63. Bottle gourd leaves: **Lagenaria vulgaris**
 B. Lau sag; H. Lauki-ka-sag; Kan. Sorakay yele; Mal. Cheranga ilagal; P. Ghia da sag; Tam. Surai ilaigal; Tel. Sorakaya akulu; Other names: Calabash; Cucumber leaves.

64. Broad bean leaves: **Vicia faba**
 H. Bakala; Kan. Kadu; Kash. Kalum; P. Kablibakla; Other name: Baklasem.

65. Brussels sprouts: **Brassica oleracea, var. gemmifera**
 B. Bilati-bandhakopi; H. Chottee gobee; Kan. Mara Kosu; Kash. Haa'kh; O. Chota bandha kobi; Tam. Kalakose.

66. Cabbage: **Brassica oleracea** var. **capitata**
 B., O. *Bandha kopee*; G., Mar. *Kobi*; H., Kash. *Band gobee*; Kan. *Kosu*; Mal. *Mutta gose*; Tam. *Muttaikose*; Tel. *Gos Koora*; Other name: Pat gobee.

67. Carrot leaves: **Daucus carota**
 B., H. *Gajar sag*; G., Mar. *Gajar pan*; Kan. *Gajri soppu*; Mal. *Carrot ilagal*; O. *Gajara patra*; P. *Gajar di sag*; Tam. *Carrot Kerrai*; Tel. *Gajjara akulu*; Other name: Shikha mula.

68. Cauliflower greens: **Brassica oleracea** var. **botrytis**
 B. *Phool-kopi sag*; H., Mar. *Phool gobee sag*; Kan. *Hukosina yele*.

69. Celery leaves: **Apium graveolens** var. **dulce**
 B. *Randhuni sag*; G. *Ajmana pan*; H. *Ajwan-ka-patta*; O. *Juani patra*.

70. Celery stalks. **Apium graveolens**, var **dulce**
 B. *Randhuni*; H. *Aj mud*

71. Chekkur manis: **Sauropolis androgynans**
 Tam. *Thauasai muningai*; Other name: Gooseberry.

72,73,74. Colocasia leaves: **Colocasia anti-quorum**
 B. *Kochu sag*; H. *Arvi-ka-sag*; Kan. *Shamangadde yele*; Mal. *Chembu ilagal*; Mar. *Alu pan*; O. *Sarue*; Tam. *Seppam ilagal*; Tel. *Chama akulu*; Other names: Guan-ka-sag; Alti; Kachu.

75. Coriander leaves: **Coriandrum sativum**
 B. *Dhane sag*; G. *Kothmer*; H. *Hara dhania*; Kan. *Kothambari soppu*; Kash. *Daaniwal*; Mal., Tam. *Kothamalli*; Mar. *Kothimbir*; O. *Dhania*; Tel. *Kothimiri*.

76. Cow pea leaves: **Vigna catjang**
 B. *Barbati*; H. *Lobia*; G. *Chorap*; Kan. *Tadagunny*; Mal. *Payar ilagal*; Mar. *Chavali Pan*; Tel. *Bobberulu*, Tam. *Karmani*.

77. Curry leaves: **Murraya koenigii**
 B., O. *Barsanga*; G. *Mitha Limbdo*; H. *Gandhela*; Kan. *Karibevu*; Mal., Tam. *Kariveppilai*; Mar. *Kadhi limb*; Tel. *Karivepaku*.

78. Drumstick leaves: **Moringa oleifera**
 B., O. *Sajna sag*; G. *Saragavo*; H. *Saijan patta*; Kan. *Nuggeyele*; Mal. *Muringa ela*; Mar. *Shevaga Pan*; Tam. *Murungai keerai*; Tel. *Mulaga akulu*; Other names: Horse radish leaves, Suha najna.

79. Fenugreek leaves: **Trigonella foenum graecum**
 B., H., O. *Methi sag*; G., Kash., Mar. *Methi*; Kan. *Menthya soppu*; Mal. *Uluva ila*; Tam. *Venthiya kerrai*; Tel. *Menthikoora*; Other name: Methika.

80,81. Fetid cassia: **Cassia tora**
 B., H. *Chakunda*; G. *Kovariya*; Mar. *Takla*; Tam. *Tagarai*; Tel. *Tantemu*; Other names: Chakwar, Dadamari.

82. Garden cress: **Lepidium sativum**
 B., H., P. *Halim*; G. *Asalio*; Kan. *Allibija*; Mar. *Ahliwa*; Tam. *Alivirai*; Tel. *Adityalu*.

83. Garden sorrel, sepals

84. Gogu: **Hibiscus cannabinus**
 B. *Mestapat*; G., Mar. *Ambadi*; H. *Pitwa*; Kan. *Pundi*; O. *Nalite saga*; Tam. *Pulichai keerai*; Tel. *Gongura*; Other name: Nalita.

85. Ipomoea stems: **Ipomoea reptans**
 B. *Kolmidanta*; Mar. *Nalichi bhaji*; O. *Kandamula danka*.

86. Ipomoea leaves: **Ipomoea reptans**
 B., H. *Kalmi sag*; Mar. *Nadishaka Nalani bhaji*; O. *Kandamula saga*; P. *Ganthain*; Tel. *Tutikoora*.

87. Knol-khol greens: **Brassica oleracea** var. **caulorapa**
 B. *Col sag*; H. *Ganth gobi-ka-sag*; Kash. *Monjhak*; P. *Gadhgobee-da-sag*.

88. Kuppameni: **Acalypha indica**
 B. *Mukthajhuri*; G. *Dadano*; H., Mar. *Kuppi khokli*; Mal, Tam. *'Kuppameni*; Kan. *Kuppigida*; Tel. *Kuppichettu*; Other name: Haritamanjari.

89. Lettuce: **Lactuca sativa**
 B. *Salad pata*; G. *Salat*; H. *Salad*; Kash. *Salaad*; Mal. *Uvar Cheera*; Tam. *Salathu*; Tel. *Kavu*.

90. Lettuce tree leaves: **Pisonia alba**

91. G. Avelatisalet Tel. *Lanchamundaku*, Tam. *Lachaikottai*, Kan. *Sule soppu*; Other name. Chinalit.

92. Manathakkali leaves: **Solanum nigrum**
B. *Kakmachi*; G. *Piludi*; H. *Makoy*; Kan. *Ganika*; Mal., Tam. *Manathakkali*; Tel. *Kamanchi*; Other name: Gurkhi.

93. Mayalu: **Basella rubra**
B., H., Mar., *Poi*; Kan. *Basale*; Mal. *Basala*; Tam. *Sivappu salakkeerai*; Tel. *Erra bachchali*; Other name: Indian red spinach.

94. Mint: **Mentha spicata**
B., H., Kan., Mal., Mar., P., Tam., Tel. *Pudina*; G. *Fudina*; Kash. *Pudynu*; O. *Podana patra*.

95. Modakathan Keerai: **Cardiospermum helicacabum**
B. *Sibjhul*; G. *Karolis*; H. *Kanphuti*; Mar. *Kapat Phodi*; Tam. *Modakathan Keerai*; Tel. *Budda kakara*; Other name: Karnaphota.

96. Mukarrate Keerai: **Boerhaavia repens**
B., Tel. *Punarnava*; G. *Vakhakhapro*; H. *Sant*; Mar. *Tambadi vasu*; Tam. *Mukaratte keerai*.

97. Mustard leaves: **Brassica campestris** var. **sarason**
B. *Sorisa sag*; H. *Sarson-ka-sag*; Kan. *Sasuve yele*; Mal. *Kadugu ila*; Mar. *Mohari-chi pan*; P. *Sarson-da-sag*; Tam. *Kadugu ilai*; Tel. *Ava akulu*; Other name: Sharisha.

98. Nerringi: **Tribulus terrestris**
B., H. *Gokhru*; G. *Belagokhru*; Kan. *Negalu*; Mal. *Neringil*; Mar. *Lahango*; Tam. *Nerringi*; Tel. *Palleru*; Other names: Bhakra; Gokshura.

99. Parsley: **Petroselinum crispum**
Kan. *Achumooda*.

100. Paruppu keerai: **Portulaca oleracea**
B. *Bara loniya*; G. *Moti*; H., P. *Kulfa*; Kan. *Doddagooni soppu* Mal. *Karie-cheera*; Mar. *Ghol*; O. *Puruni sag*; Tam. *Paruppu keerai*; Tel. *Pappu koora*; Other name: Khursa.

101. Ponnanganni: **Alternanthera sessilis**
B. *Khanchari*; H. *Saranti sag*; Kan. *Honagone soppu*; Mal., Tam., *Ponnanganni*; O. *Madarang*; Tel. *Ponnaganti Koora*; Other name: Khane hari

102. Pumpkin leaves: **Cucurbita maxima**
B., H. *Kumhra sag*; Kan. *Kumbale soppu*; Mal. *Mathan elakal*; Mar. *Bhopla-chipan*; P. *Sitaphal-de-patte*; Tam. *Parangi ilai*; Tel. *Gummadi akulu*; Other name: Kadu-ka-sag.

103. Radish leaves: **Raphanus sativus**
B., H., Guj, Mar. *Mooli ka sag*; Kash. *Muji lak*; Kan. Mal. Tam. *Mullangi ilaigal*; Tel. *Mullangi akulu*; Other name: Mulaka.

104. Table radish leaves: **Raphanus sativus**

105. Rape plant stem: **Brassica napus**
B. *Sorisa danta*; G. *Rainuzad*; H. *Sarson-ki-dandi*; O. *Sorisanada*.

106. Rape leaves: **Brassica napus**

107. B., O., *Sorisa sag*; G. *Sarsiya*; H. *Sag Sarsoon*.

108. Safflower leaves: **Carthamus tinctorius**
B., H. *Kusum sag*; G. *Kusumbna pan*; Kan. *Kusume yele*; Mal. *Kusumbha ilagal*; Mar. *Kardi pan*; Tam. *Sendurkam*; Tel. *Kusuma akulu*; Other name: Kusumbha.

109. Shepu: **Peucedanum graveolens**
B., H. *Sowa*; G. *Suvani bhaji*; Kan. *Sabsige*; Mar. *Shepu*; Tam. *Sathakuppa*; Other names: Surva; Satapushpi.

110. Spinach: **Spinacia oleracea**
B., O. *Palang sag*; G., H., Kash., Mar., P. *Palak*; Kan. *Spinak soppu*; Mal. *Basala cheera*; Tam. *Pasalai keerai*; Tel. *Palakoora*.

112. Susni sag: **Marsilea minuta**
B. *Susni sag*; Kan. *Chitigma soppu*; Kash. *Paflu*; P. *Godhi*; Tam. *Araikeerai*; Tel. *Chikllintha koora*.

113. Tamarind leaves: **Tamarindus indica**
B. *Tetul pata*; G. *Amli*; H.P. *Imli patte*; Kan. *Hunise chiguru*; Mal., Tam. *Puli ilaigal*; Mar. *Chinchecha pala*; O. *Tentuli*; Tel. *Chinta Chiguru*.

114. Turnip greens: **Brassica rapa**
H. *Shalgam-ka-sag*.

115. Arrowroot flour: **Maranta arundinacea**
B. *Tavkeel*; H. *Tikhor*; Kan. *Tavaksha*; Mal. *Koovapodi*; Mar. *Toukil*; O., P. *Araroot*; Tam. *Kuva mavu*; Tel. *Palagunda*.

116. Banana rhizome: **Musa paradisicum**
H. *Kela*; Kan. *Bale*; Mal., Tam. *Vazhai kizhangu*; Tel. *Arati dumpa*; Other name: *Kadali*.

117. Beet root: **Beta vulgaris**
B., G., Kan., Mar., Tam., Tel. *Beet*; H., P. *Chukandar*; O. *Bita*.

118. Carrot: **Daucus carota**
B., G., H., Mar., P. *Gajar*; Kan. *Gajjare*; Kash. *Gaazur*; O. *Gajara*; Tel. *Gajjara gadda*.

119. Colocasia: **Colocasia antiquorum**
B. *Kochu*; G. *Alvi*; H., P. *Arwi*; Kan. *Samagadde*; Mal. *Chembu*; Mar. *Alu kanda*; O. *Saru*; Tam. *Seppam Kizhangu*; Tel. *Chama dumpa*; Other names; *Kachalu*, *Taro*.

120. Khamealu: **Dioscorea alata**
A. *Kalalu*; B., H. *Chupri alu*; Kan. *Onthalai gasu*; Mal. *Kachil kizhangu*; Tam. *Perumvalli kizhangu*; Tel. *Pendalamu*.

121. Mango ginger: **Curcuma amada**
B. *Amada*; H. *Am haldi*; Kan. *Mavina hasisunthi*; Mal. *Mangainji*; Mar. *Amba haldi*; Tam. *Mainji*; Tel. *Mamidi allam*; Other name: *Karpuraharidra*.

122,123. Onion: **Allium cepa**
B., H. *Pyaz*; G. *Kando*; Kan. *Eerulli*; Kash. *Gandah*; Mal. *Ulli*. Mar. *Kanda*; O. *Piaja*; P. *Ganda*; Tam. *Vengayam*; Tel. *Neerulli*; Other name: *Palandu*.

124. Parsnip: **Pastinaca sativa**.

125. Potato: **Solanum tuberosum**
B. *Galalu*; G., Mar. *Batata*; H., O., P. *Alu*; Kan. *Alugadda*; Kash. *Oole*; Mal., Tam. *Urula kizhangu*; Tel. *Alu gaddalu*.

126 to 129. Radish: **Raphanus sativus**
B., G., Mar., O. *Mula*; H., P. *Muli*; Kan., Mal., Tam., Tel. *Mullangi*; Kash. *Muj*; Other name; *Wuazu*.

130. Sweet potato: **Ipomoea batatas**
B. *Ranga alu*; G. *Sakkaria*; H. *Shakarkand*; Kan. *Genasu*; Mal., Tam. *Sakkaravalli kizhangu*; Mar. *Ratalu*; O. *Kandamula*; P. *Sakkarkamali*; Tel. *Chilagada dumpa*.

131,132. Topioca: **Manihot esculenta**
B., H. *Simla alu*; Kan. *Mara genasu*; Mal. *Marachini*; O. *Kathakonda*; Tam. *Maravalli kizhangu*; Tel. *Karappendalamu*; Other names; *Cassava*; *Kappa*.

133. Turnip: **Brassica rapa**
H. *Shalgam*; Kash. *Guagu'*.

134. Yam, elephant: **Amorphophallus campanulatus**
B., Ol., G., Mar. *Suran*; H., P. *Zimikand*; Kan. *Suvarna gadde (dodda)*; Mal. *Chena (valuthu)*; O. *Hathikhojia alu*; Tam. *Senai Kizhangu*; Tel. *Kanda dumpa*; Other name: *Arsaghna valukand*.

135. Yam, ordinary; **Typhonium trilobatum**
B. *Gherkochoo*; Kan. *Suvarna gadde*; Mal. *Chena (sadharana)*; Mar. *Goradu*; O. *Khamba alu*; Tam. *Karunai kizhangu*; Tel. *Duradakandagadda*.

136. Yam, wild: **Dioscorea versicolor**
B. *Banalu*; H. *Suar alu*; Kan. *Heggenasu*; Mal. *Kattuchena*; Mar. *Manakund*; Tam. *Kodikizhangu*; Tel. *Chedu paddu dumpa*.

OTHER VEGETABLES

137. Ash gourd: **Benincasa hispida**
B. *Chalkumra*; G. *Bhuru kohlu*; H., P. *Petha*; Kan. *Budagumbala*; Kash. *Mashaaly al*; Mal. *Kumbalanga*; Mar. *Kohala*; O. *Panikakharu*; Tam. *Poosini kai*; Tel. *Boodida gummadi*; Other name: *Kooshinanda*.

138. Beans, scarlet runner: **Phaseolus coccineus**
H. *Sem*; Other names: *Sim*; *Uri*.

139,140. Bitter gourd: **Momordica charantia**
B., G., H., Kash., P. *Karela*; Kan. *Hagal Kai*; Mal. *Kaippakka*; Mar. *Karle*; O. *Kalara*; Tam. *Pavakkai*; Tel. *Kakara kayi*.

141. Bottle gourd: **Lagenaria vulgaris**
B., O. *Lau*; G. *Dudhi*; H. *Lowki*; Kan. *Sorekai*; Kash. *Zeeth*; Mal. *Charanga*; Mar. *Pandhara bhopla*; P. *Ghia*; Tam. *Surai Kai*; Tel. *Sorrikaye*; Other names: Calabash cucumber; kaddu.

142. Brinjal: **Solanum melongena**
B. *Begun*; G. *Ringna*; H. *Baingan*; Kan. *Badane*; Kash. *Waangum*; Mal. *Vazhuthinga*; Mar. *Vange*; O. *Baigan*; P. *Bataun*; Tam. *Kathiri*; Tel. *Vankaya*; Other name: Egg plant; Hingoli.

143. Broad beans: **Vicia faba**
B. *Makhan sim*; G. *Fafda papdi*; H. *Bakla*; Kan. *Chkapparadavare*; Mal. *Avarakka*; O. *Simba*; Tam. *Avarai*; Tel. *Pedda chikkudu*.

144. Cauliflower: **Brassica oleracea**, var, *botrytis*
B., G., H., Kash., Mar., O., P. *Phul gobi*; Kan. *Hukosu*; Tam. *Kovippu*; Other name: Olkapi.

145. Cho-cho-marrow: **Sechium edule**
Kan. *Seeme badane*; O. *Phuti kakudi*; Tam. *Seemai kathirika*; Tel. *Seema vankayi*.

146. Cluster beans: **Cyamopsis tetragonoloba**
B. *Jhar sim*; G. *Govar*; H. *Guar-ki-phalli*
Kan. *Gori koyi*; Mal., Tam. *Kothavara*; Mar. *Govari*; O. *Guanra chhuin*; P. *Guara-di-phalli*; Tel. *Goruchikkudu*; Other name: Bakuchi.

147. Colocasia stem: **Colocasia antiquorum**
B. *Kochu danta*; H. *Arwi-ki-dandi*; Kan. *Kesu dantu*; Mal. *Chembin thandu*; Mar. *Alu-che-deth*; O. *Sarunada*; Tam. *Seppan-thandu*; Tel. *Chama kada*.

148. Cow pea pods: **Vigna catjang**
See No. 35

149. Cucumber: **Cucumis sativus**
B. *Sasha*; G. *Kakdi*; H., P. *Khira*; Kan. *Southe kayi*; Kash. *Laa'r*; Mal. *Vellarikka*; Mar. *Kakadi*; O. *Kakudi*; Tam. *Kakkarikkai*; Tel. *Dosa kayi*.

150. Double beans: **Faba vulgaris**
G. *Papdi*; H. *Chastang*; Mal. *Avara*; Other names; Kalamatar; Kaduhuralikayi.

151. Drumstick: **Moringa oleifera**
B. *Sajna danta*; G. *Saragavo*; H. *Saijan-ki-phalli*; Kan. *Nugge kayi*; Mal., Tam. *Muringakkai*; Mar. *Shevaga sheng*; O. *Sajana chhuin*; Tel. *Mulaga kada*; Other names: Horse radish; Shobanjana.

152. Drumstick flowers: **Moringa oleifera**.

153. Field beans, tender: **Dolichos lablab**
See No. 36.

154. Figs: **Ficus cunia**
B. *Dumbur*; H. *Jahrphali*; Kan. *Garagara*; Mal. *Perina*; Mar. *Porodumer*; Tam. *Taragadi*; Tel. *Bommamarri*.

155. French beans: **Phaseolus vulgaris**
G. *Fansi*; H. *Bakla*; Kan. *Huruli kayi*; Kash. *Fraa'sh bean*; Mar. *Pharasbee*; P. *Fras bean*.

156. Ghosala: **Luffa cylindrica**
B. *Dhundal*; G. *Turia*; Kan. *Tuppaturakai*; Mal. *Kattupeechal*; Mar. *Gohosala*; P. *Ghia tori*; Tel. *Guthi beera*.

157. Giant chillies (*Capsicum*): **Capsicum annuum** var. *grossa*
B. *Lanka (bilathi)*; H. *Sagiya mirchi*; Kash. *Marchawangum*; Mal. *Unda mulagu*; Mar. *Bhoplimirchi*; P. *Shimle-di-mirch*; Tam. *Koda milagai*; Tel. *Mirapakaya*.

158. Jack, tender: **Artocarpus heterophyllus**
B. *Aanchar*; G. *Kawla phanas*; H. *Kathal*; Kan. *Halasu (yele)*; Mal. *Idichakka*; Mar. *Phanas*; O. *Panasa katha*; Tam. *Pila pinju*; Tel. *Panasa*; Other name Panasa.

159. Jack fruit seeds **Artocarpus heterophyllus**.

160. Kankoda: **Momordica dioica**
B. *Bankarela*; H. *Golkandra*; Kan. *Karlikai*; Mal. *Erimaposal*; Mar. *Kartoli*; Tam. *Paluppakkai*; Tel. *Akakara*.

161. Karonda: **Carissa carandas**.

162. B. *Karamcha*; G. *Karamarda*; H. *Karonda*; Kan. *Karekayi*; Mar. *Karananda*; Tam. *Kalakkay*; Tel. *Vaka*.



163. Kheksa: *Momordica cochinchinensis*
 B. *Golkakra*; G. *Karapata*; H. *Kheksa*; Tel. *Advikakra*; Other names: *Kakrol*, *Bhat kerela*.

164. Kovai: *Coccinia cordifolia*
 B. *Telakuchu*; G. *Ghole gluru*; H. *Konduri*; Kan. *Tondekayi*; Mal., Tam. *Kova kai*; Mar. *Tondale*; O. *Kunduru*; Tel. *Donda kayi*; Other name: *Bimba*.

165. Knol-Khol: *Brassica oleracea*, var. *caulorapa*
 B. *Olkopi*; G., Mar. *Nol-kol*; H. *Kohl-rabi*; Kash. *Mo'nd*; O. *Ulkobi*; P. *Ganth gobi*.

166. Ladies fingers: *Abelmoschus esculentus*
 B. *Dherash*; G. *Bhinda*; H., P. *Bhindi*; Kan. *Bende*; Kash. *Bindu*; Mal., Tam. *Vendakkai*; Mar., O. *Bhendi*; Tel. *Benda kayi*; Other name: *Okra*.

167. Lokooch, raw: *Artocarpus lakoocha*
 B. *Dephal*; H. *Barhar (kacha)*; Kan. *Vatchuli*; Mar. *Wotomba*; Tel. *Kamma-regu*; Other name: *Monkey jack*.

168. Leeks: *Allium porrum*
 B. *Piyaj (bilati)*; H. *Lasson (Vilayiti)*; Kash. *Praan*; Mar. *Khorat*; O. *Rasuna (bilati)*.

169. Lotus stem: *Nelumbium nelumbo*
 H. *Kamal gatta*; Mal., Tam. *Thamara thandu*; Tel. *Thamara kada*.

170. Mango green: *Mangifera indica*
 B. *Am (Kancha)*; G. *Ambo*; H. *Am*; Kan. *Mavinakayi*; Mal., Tam. *Manga*; Mar. *Amba*; O. *Ambu (Kancha)*; P. *Am (hare)*; Tel. *Mamidi kayi*; Other names: *Amra*, *Chuta*.

171. Onion stalks: *Allium cepa*
 B. *Piyaz kali*; G. *Dunglina dakkadi*; H. *Pyaz*; Kan. *Eerulli soppu*; Mal. *Ulli thandu*; Mar. *Pati*; O. *Piaja sandha*; Tam. *Vengaya thandu*; Tel. *Ulli kadalu*; Other name: *Palandu*.

172. Papaya, green: *Carica papaya*
 B. *Pempe (Kancha)*; G. *Papayi*; H. *Papita*; Mar. *Papaya*; Kan. *parangi*; Mal. *Omakaya*; P. *Katcha pepita*; Tam. *Pappali kai*; Tel. *Boppayi kayi*.

173. Parwar: *Trichosanthes dioica*
 B. *Patol*; G. *Padval*; H. *Parwal*; Mal. *Potalam*; Mar. *Parwar*; O. *Potala*; Tel. *Kommu Potla*; Other name: *Patulika*.

174. Pink beans: *Phaseolus* sp.
 B. *Lal sim*; G. *Valore*; H. *Babril*; Kan. *Kempu huruli*; Mal. *Chuvana avara*; O. *Nali simba*.

175. Plantain flower: *Musa sapientum*
 B. *Mocha*; G., Mar. *Kel Phool*; H. *Kelaka-phool*; Kan. *Bale motho*; Mal., Tam. *Vazhapoo*; O. *Kadali bhanda*; P. *Kele-da-phool*; Tel. *Arati puvvu*.

176. Plantain, green: *Musa sapientum*
 B. *Kela (kanch)*; G. *Kela*; H., P. *Kela (hara)*; Kan. *Bale kayi*; Mal., Tam. *Vazhakkai*; Mar. *Kele*; O. *Bantala kadali*; Tel. *Arati kayi*.

177. Plantatin stem: *Musa sapientum*
 B. *Thor*; G. *Kelanu thed*; H. *Kele-ka-tana*; Kan. *Dindu*; Mal. *Unnipindi*; Mar. *Kelicha khunt*; O. *Kadali manja*; Tam. *Vazhai thandu*; Tel. *Arati doota*.

178. Pumpkin: *Cucurbita maxima*
 B. *Kumra*; G. *Kohlu*; H. *Kaddu*; Kan. *Kumbala*; Kash. *Paa'rimal*; Mal. *Mathan*; Mar. *Lal bhopla*; O. *Kakharu*; P. *Sitaphal*; Tam. *Parangikkai*; Tel. *Gummadi kayi*.

179. Pumpkin flowers: *Cucurbita maxima*.

180. Ridge gourd: *Luffa acutangula*
 B. *Jhinga*; G. *Turia*; H. *Torai*; Kan. *Heeraikai*; Kash. *Turrel*; Mal. *Peechinga*; Mar. *Dodka*; O. *Janchi*; P. *Kali tori*; Tam. *Pirkkankai*; Tel. *Beera kayi*; Other name: *Katukoshataki*.

181. Snake gourd: *Trichosanthes anguina*
 B. *Chichinga*; G. *Pandola*; H., O. *Chachinda*; Kan. *Padavala*; Mal. *Padavalanga*; Mar. *Padwal*; P. *Galartori*; Tam. *Podalangai*; Tel. *Potla kayi*; Other name: *Chachinda*.

182. Sundakai: *Solanum torvum*
 B. *Titbaigum*; Kan. *Sondekai*; Mal. *Sundakka*; Tam. *Sundakkai*; Tel. *Usthi kayi*.

183. Sword beans: **Canavalia gladiata**
 B. *Kath sim*; G. *Taravardini vel*; H. *Bara sem*; Kan. *Tumbekai*; Mal. *Val avava*; Mar. *Abaichisheng*; O. *Maharda*; Tam. *Kathu thambattam*; Tel. *Adavi thamma*; Other name: Makhan sim.

184. Tinda; **Citrullus vulgaris**
 G. *Tadabuch*; H., P. *Tinda*; Other name: Round gourd.

185. Tomato, green: **Lycopersicon esculentum**
 B. *Bilathi bagun*; H. *Tamarat*; Kash. *Ruwangan*; Mal., Tam. *Thakkali*; Other name: Love apple.

186. Vegetable marrow: **Cucurbita pepo**
 B. *Dhudul*; H. *Safed kaddu*; Kan. *Dilpasand*; Kash. *Kaa'shiral*; Mar. *Kashi bhopla*; O. *Golu phuti kakuri*; Tam. *Suraikayi*; Other name: Field pumpkin.

187. Water chestnut: **Trapa bispinosa**

188. B. *Pani phal*; G. *Shingoda*; H., Mar. *Shingara*; Mal. *Karimpolam*; O. *Pani singhara*; Tam. *Singhara*; Tel. *Kubyakam*; Other name: Shringota.

NUTS & OILSEEDS

189. Areca nut: **Areca catechu**
 B., H., Mar., P. *Supari*; G. *Sopari*; Kan. *Adike*; Mal. *Adakka*; O. *Gua*; Tam. *Pakku*; Tel. *Vakka*; Other names: Betel nut, poogiphalam.

190. Almond: **Prunus amygdalus**
 B., G., H., Kan., kash., Mar., O., P., Tel. *Badam*; Mal. *Vatam kottai*; Tam. *Vadam kottai*.

191. Avocado pearnut: **Persea drymifolia**

192. Cashew nut: **Anacardium occidentale**
 B. *Hijli badam*; G., H., Kash., Mar., P. *Kaju*; Kan. *Geru beeja*; Mal. *Kasu andi*; O. *Lanka ambu manji*; Tam. *Mundiri paruppu*; Tel. *Jeedi pappu*.

193. Chilgoza: **Pinus gerardiana**
 H. *Chilgoza*; P. *Rhi*.

194,195. Coconut: **Cocos nucifera**
 B. *Narkel*; G., H. *Nariyal*; Kan. *Thengini kai*; Kash. *Narjeel*; Mal., Tam. *Thenga*; Mar. *Narel*; O. *Nadia*; P. *Gola*; Tel. *Kobbari*; Other name: Narikela.

196. Coconut tender: **Cocos nucifera**
 B. *Dab*; H. *Nariyal*; Kan. *Yelnee*; Mal. *Karikku*; Mar. *Narel*; O. *Paida*; Tam. *Elani*; Tel. *Letha Kobbari*; Other name: Narikela

197. Coconut milk: **Cocos nucifera**
 B. *Narikel doodh*; H. *Nariyal-ka-doodh*; Kan. *Kobbare halu*; Mal., Tam. *Thengapal*; P. *Gola-do-doodh*; Tel. *Kobbari palu*; Other name: Narikela.

198. Coconut water: **Cocos nucifera**
 B. *Daber jal*; G. *Paninariyal*; H. *Nariyal-ka-pani*; Kan. *Thenganeeru*; Mal. *Thenga Vellam*; Mar. *Naral pani*; O. *Paida pani*; P. *Gola-da-pani*; Tam. *Ilanir*; Tel. *Kobbari neeru*; Other name: Narikela.

199. Coconut Meal: Deoiled: **Cocos nucifera**.
 Mal., Tam. *Thenga punnakku*; Tel. *Kobbari pindi*; Other name: Narikela.

200. Garden cress seeds: **Lepidium sativum**
 See No. 82.

201. Gingelly seeds: **Sesamum indicum**
 B., H., Mar., P. *Til*; G. *Tal*; Kan. *Acchellu*; Mal., Tam. *Ellu*; O. *Rasi*; Tel. *Nuvvulu*; Other name: Sesame seeds, Tila.

202,203. Groundnut: **Arachis hypogaea**
 B., O. *China badam*; G. *Bhoising*; H., Kash., P. *Moong phali*; Kan. *Kadale kayi*; Mal., Tam. *Nilakkadalai*; Mar. *Bhui mug*; Tel. *Verusanaga*.

204. Groundnut cake: **Arachis hypogaea**
 B. *Badamer khol*; H. *Chinia-badam-ka-khali*; Mal., Tam. *Kadalai punnakku*; Mar. *Pend*; Tel. *Verusanagapindi*.

205. Linseed seeds: **Linum usitatissimum**
 B. *Tishi*; G., H., P. *Alsi*; Kash. *Alish*; Kan. *Agasi*; Mal. *Cheruchana vithu*; Mar. *Jawas*; O. *Pesi*; Tam. *Ali vidai*; Tel. *Avise ginzalu*; Other name: Atasi.

206. Mustard seeds: **Brassica nigra**
 B. *Sorse*; G., H., P. *Rai*; Kan. *Sasuve*; Kash. *Assur*; Mal., Tam. *Kadugu*; Mar. *Mohori*; O. *Sorisa*; Tel. *Avalu*.

207. Niger seeds: **Guizotia abyssinica**
 B., G. *Ram til*; H. *Kala til*; Kan. *Gurellu*; Mar. *Karale*; Tam. *Kattelu*; Tel. *Valasulu*; Other name: Surguja.

208. Pistachio nut: *Pistacia vera*
 B. *Pesta*; G., H., Kan., Mal., Mar., O., P., Tam., Tel. *Pista*; Kash. *Jalguza*.

209. Piyal seeds: *Buchanania latifolia*
 B. *Piyal*; G., Mar. *Charoli*; H., P. *Chironji*; Kan. *Narkal*; Tam. *Sarai paruppu*; Tel. *Sarapappu*.

210. Safflower seeds: *Carthamus tinctorius*
 B. *Kusum*; G. *Kusumbo*; H. *Kardi*; Kan. *Kusambe*; Mar. *Karadi*; Tam. *Sendurakan*; Tel. *Kusuma ginzalu*; Other name: *Kusumbh* seeds.

211. Sunflower seeds: *Helianthus annuus*
 B., P. *Suraj mukhi*; H., Mar. *Surya mukhi*; Mal., Tam. *Suryakanthi*; Tel. *Podduthirugudu puvvu ginzalu*.

212. Walnut: *Juglans regia*
 B., G., H., P. *Akhrot*; Mar. *Akhrod*; O. *Akhoot*.

221. Coriander: *Coriandrum sativum*
 B., G., H., O., P. *Dhania*; Kan. *Kothambari*; Kash. *Daaniwal*; Mal. *Kothambalari*; Mar. *Dhane*; Tam. *Kothamalli vidai*; Tel. *Dhaniyalu*.

222. Cumin seeds: *Cuminum cyminum*
 B., H., Mar., O., P., Jira; G. *Jiru*; Kan. *Jeerage*; Kash. *Zyur*; Mal., Tam. *Jeerakam*; Tel. *Jeelakarra*; Other name: *Jiruka*.

223. Fenugreek seeds: *Trigonella foenum graecum*
 B., G., H., Mar., O. *Methi*; Kan. *Menthe*; Kash. *Meeth*; Mal. *Uluva*; P. *Meth*; Tam. *Venthayam*; Tel. *Menthulu*; Other name: *Methika*.

224. Garlic: *Allium sativum*
 B. *Rashun*; G., P., *Lasan*; H. *Lehsan*; Kan. *Bellulli*; Kash. *Ruhan*; Mal., Tel. *Vellulli*; Mar. *Lasoon*; O. *Rasuna*; Tam. *Ullipoondu*; Other names: *Arishta*, *Lashuna*.

CONDIMENTS AND SPICES

213. Water melon seeds: *Citrullus vulgaris* •
 B., H., M., *Tarbuz*.

214. Arisithippili:
 B. *Pipul*; H. *Peepal*; Mal., Tam. *Arisithippili*; O. *Sarupipali*.

215. Asafoetida: *Ferula foetida*
 B., G., H., Mar., P. *Hing*; Kan., O. *Hingu*; Kash. *Yangu*; Mal., Tam. *Perungayam*; Tel. *Inguva*.

216. Cardamon: *Elettaria cardamomum*
 B. *Elachi*; G., H., P. *Elaychi*; Kan. *Yelakki*; Kash. *Aa'l Budu 'a aa' l*; Mal. *Elathari*; Mar. *Veldoda*; O. *Alaichi*; Tam., Tel. *Elakkai*; Other name: *Upakunchika*.

217,218. Chillies: *Capsicum annuum*
 B., O. *Lanka*; G. *Marcha*; H. *Mirch*; Kan. *Menasina kayi*; Kash. *marc wangun*; Mar. *Mirchi*; Mal. *Mulaku*; P. *Mirchan*; Tam. *Milagai*; Tel. *Mirapa kayai*.

219. Cloves: *Syzygium aromaticum*.

220. B., O. *Labang*; G., H., Mar. *Lavang*; Kan. *Lavanga*; Kash. *Ruang*; Mal., Tam. *Krambu*; P. *Long*; Tel. *Lavangalu*.

225. Ginger, fresh: *Zinziber officinale*
 B., O. *Ada*; G. *Adu*; H., P. *Adrak*; Kan. *Shunti*; Mal., Tam. *Inji*; Mar. *Ale*; Tel. *Allam*; Other name: *Ardraka*.

226. Lime peel: *Citrus medica var. acida*
 B. *Leber Khosa*; G. *Limbuni chal*; H. *Neetu ka chilka*; Kan. *Nimbe sippai*; Mal. *Cherunaranga tholu*; Mar. *Limbsal*; O., Lembri *Chopa*; Tam. *Elumicham thol*; Tel. *Nimma thokka*.

227. Mace: *Myristica fragrans*
 B., O. *Jayitri*; G., Mar. *Jaypatri*; H. *Javithri*; Kash. *Jalwatur*; Mal., Tam. *Jathipatri*; Tel. *Japathri*.

228. Mango powder: *Mangifera Indica*
 H. *Amchoor*.

229. Nutmeg: *Myristica fragrans*
 B., G., H., Mar., O. *Jaiphal*; Kan., Tel. *Jaji Kayi*; Kash. *Zaaphal*; Mal., Tam. *Jathikkai*.

230. Nutmeg rind: *Myristica fragrans*.

231. Omum: *Trachyspermum ammi*
 B. *Joan*; G. *Ajamo*; H., P. *Ajwan*; Kan. *Oma*; Kash. *Jaaweni*; Mal. *Ayamothakam*; Mar. *Onva*; O. *Juani*; Tam. *Omum*; Tel. *Vamu*; Other name: *Jurani*.

232. Pepper: **Piper nigrum**

233. B., O. *Golmarich*; G. *Mari*; H., P. *Kalimirch*; Kan. *Kari Menasu*; Kash. *Marutus*; Mal. *Kurumulaku*; Mar. *Mire*; Tam. *Milagu*; Tel. *Miriyalu*; Other name: Maricha.

234. kandanthippilli: **Piper longum**
B. *Piplamor*; Mal., Tam. *Kandanthippilli*; O. *Pipali*; H. *Pipal*; Mar. *Pimpli*; Tel. *Pippallu*.

235. Poppy seeds: **Papaner somniferum**
B. *Posto*; G. *Aphina*; H. *Postdana*; Kan. *Afim*; Mal. *Afiam*; Mar. *Khaskhas*; Tam. *Khasakhasa*; Tel. *Gasagasalu*.

236. Tamarind pulp: **Tamarindus indica**
B. *Tetul*; G. *Amli*; H., P. *Imli*; Kan. *Hunise hannu*; Kash. *Tamber*; Mal., Tam. *Puli*; Mar. *Chinch*; O. *Tentuli*; Tel. *Chintha Pandu*.

237. Turmeric: **Curcuma domestica**
B. *Holud*; G. *Haldhar*; H., P. *Haldi*; Kan. *Anashina*; Kash. *Lader*; Mal., Tam. *Manjal*; Mar. *Halad*; O. *Haladi*; Tel. *Pasupu*; Other name: Haridra.

FRUITS

238. Ambada; **Spondias mangifera**
B., H. *Amra*; Kan. *Ambate*; Mal. *Mampuli*; Tam. *Mambulichi*; Tel. *Amratakamu*; Other name: Indian hog plum.

239. Amla: **Emblica officinalis**
B. *Amlaki*; G., H. *Amla*; Kan., Mal., Tam., *Nellikai*; Mar. *Anvla*; O. *Anla*; Tel. *Usirikayi*; Other name: Indian gooseberry.

240. Apple: **Malus sylvestris**
G. *Safarjan*; H., O., B. *Sev*; Kan. *Sebu*; Kash. *Tsoonth*; Mar. *Safarchand*; P. *Seo*; Other name: Tarel.

241. Apricot: **Prunus armeniaca**

242. H. *Khoomani*; Kash. *Tser*; P. *Chali*; Other name: Khubani.

243. Avacdado pear: **Persea americana**
B. *Kulunashpati*; Kash. *Goshtub tang*; Other name: Butter fruit.

244. Bael fruit: **Aegle marmelos**
B., H., Mar. *Bel*; G. *Bil*; Kan. *Bilpatre*; Mal., Tam., *Bilwa pazham*; Tel. *Maredu pandu*; Other name. Bilva.

245. Banana, ripe: **Musa paradisiaca**
B. *Kala (paka)*; G., H., Kash. *Kela*; Kan. *Bale hannu*; Mal., Tam., *Vazha pazham*; Mar. *Kele*; O. *Champa kadali*; P. *Kella*; Tel. *Arati pandu*; Other name: Kadali.

246. Banyan tree figs: **Ficus bengalensis**
B. *Bar*; G. *Vad*; H. *Bargad-ka-phal*; Kan. *Mara*; Mal., Tam. *Alam pazham*; Mar. *Vada*; Tel. *Marri pandu*; Other name: Bahupada.

247. Bilimbi: **Averrhoa bilimbi**
B. *Kamranga*; Kan. *Kamaleku*; O. *Karamanga*.

248. Bread fruit: **Artocarpus altilis**
B., H. *Madar*; Mal. *Kadachakka*; Mar. *Vilayatiphanas*; Tam. *Seemapila*; Tel. *Seema panasa*.

249. Bullock's heart: **Annona reticulata**
B. *Nona*; G., Mar. *Ramphal*; H. *Nona atwa*; Kan., Tel. *Ramaphala*; Mal. *Athachakka*; O. *Raja amba*; Tam. *Ramsitapazham*.

250. Cape gooseberry: **Physalis peruviana**
B. *Tepari*; G. *Popta*; H., P. *Rasbari*; Kan. *Guddehannu*; Mal. *Kodinellikkai*; Mar. *Phopti*; Tel. *Buddahasara*; Tam. *Thol-thakkali*.

251. Cashew fruit: **Anacardium occidentale**
B. *Hijli badam*; G., H., Mar., P. *Kaju phal*; Kan. *Geru hannu*; Mal. *Kasu mango*; O. *Lanka amba*; Tam. *Mundiri pazham*; Tel. *Jeedi pandu*.

252. Cherries, red: **Prunus cerasus**
H., Kash., P. *Gilas*

253. Currants, black
H. *Munakka*

254. Dates: **Phoenix dactylifera**

255. B. *Khejur*; G., H., Mar., P., *Khajur*; Kan. *Kharjoora*; Kash. *Kha'zur*; Mal. *Eethapazham*; O. *Khajuri*; Tam. *Pericham pazham*; Tel. *Kharjoora pandu*.

256. Figs: **Ficus carica**

B. *Dumoor*; G., H., Kash., Mar., P. *Anjeer*; Mal., Tam. *Atti pazham*; O. *Dimiri*; Tel. *Anjuru*; Other name: Gullar.

257. Grape: **Vitis vinifera**.

258. B., H., P., O. *Angoor*; G., Kan., Mar., Tam., Tel. *Draksha*; Kash. *Da'ch*; Mal. *Mundiringa*.

259. Grape fruit: **Citrus paradisi**

260. B. *Bilatibatabi (Jambura)*; G., H. *Chakotra*; Kash., Mar., *Be'daana*; Mal. *Mundri pazham*; O. *Bada angur*.

261. Guava, country: **Psidium guajava**

B. *Payra (deshi)*; G. *Jam phal*; H., P. *Amrud*; Kan. *Seebe*; Mal. *Perakka (nattu)*; Mar. *Peru*; O. *Pijuli (deshi)*; Tam. *Koya pazham*; Tel. *Jami pandu*.

262. Guava, hill: **Psidium cattleyanum**

263. Harfarowrie: **Phyllanthus distichus**

B. *Hari phal*; H. *Harfarauri*; Kan., Mal., Tam. *Aranelli*; Mar. *Rai avala*; Tel. *Racha usiri kayi*; Other name: Star gooseberry.

264. Jack fruit: **Artocarpus heterophyllus**

B. *Kanthal*; G., Mar. *Phanas*; H., P. *Kathal*; Kan. *Halasu*; Mal. *Chakka*; O., Tel. *Panasa*; Tam. *Pala pazham*.

265. Jam, safed: **Eugenia malaccensis**, Malay apple.

266. Jambu fruit: **Syzygium cumini**

B. *Kalojam*; G. *Jambu*; H., P. *Jamun*; Kan. *Neralai*; Mal., Tam. *Naga pazham*; Mar. *Jambhool*; O. *Jamukoli*; Tel. *Neredu pandu*.

267. Korukkapalli: **Pithecellobium dulce**

B. *Tetul (bilati)*; G. *Amli goras*; H. *Singhri*; Kan. *Seema hunise*; Mal., Tam. *Korukkapalli*; Mar. *Chinch (vilaythi)*; Tel. *Seema chinta*; Other name: Manila imli.

268. Lakuch: **Artocarpus lakoocha**

B. *Dephal dahua*; H. *Barhar*; Kan. *Vote huli*; Mar. *Wotombe*; Tam. *Ilagusam*; Tel. *Kamma regu*.

269. Lemon: **Citrus limon**

B. *Pati lebu*; G. *Motu limbu*; H. *Bara nimbu*; Kash. *Nyomb*; Kan. *Bijapura*; Mal. *Poo naranga*; Mar. *Limbu*; O. *Kagaji limbu*; Tam. *Pesiya yelu michai*; Tel. *Bijapuram*.

270. Lemon, sweet: **Citrus limetta**

B. *Mitha lebu*; G. *Mitha limbu*; H. *Mitha neebu*; Kan. *Gaja nimbe*; Tam. *Kolinchi pazham*; Tel. *Gaja nimma Pandu*.

271. Lichi: **Nephelium litchi**

H. *Lichi*

272. Lichi, bastard: **Nephelium longana**

B. *Ashphal*; H. *Ansfal*; Kan. *Kanakindel*; Mal. *Parakotta*; Mar. *Wumb*; Tam. *Puvatti*.

273. Lime: **Citrus aurantifolia**

B. *Lebu*; G. *Kadgilimbu*; H. *Neembu*; Kan. *Nimbe*; Kash. *Nyomb*; Mal. *Cherunaranga*; Mar. *Musumbe*; O. *Gangakulia lembu*; P. *Nimbha*; Tam. *Elumichai*; Tel. *Nimma pandu*.

274. Lime, sweet, Malta

275. Lime, sweet, Musammi: **Citrus sinensis**

B., G., Mar., H. *Musambi*; Kan. *Kittile*; Tel. *Narange*.

276. Loquat: **Eriobotrya japonica**

H., Kash., Tel. *Lokat*; Kan. *Laquot*; Mal., Tam. *Lakot pazham*; Mar. *Lukat*; Other name: Japan plum.

277. mahua, ripe: **Bassia longifolia**

B., G., H., Mar. *Mahua*; Kan. *Hippe*; Mal. *Poonamilupa*; O. *Mahula*; Tam. *Iluppai*; Tel. *Ippa*.

278. Mango, ripe: **Magnifera indica**

B., H. *Aam (paka)*; G. *Keri*; Kan. *Mavina Hannu*; Kash., P. *Amb*; Mal., Tam. *Mam pazham*; Mar. *amba (piklela)*; O. *amba (pachila)*; Tel. *Mamidi pandu*; Other name: Amra.

279. Mango steen: **Garcinia mangostana**

B., H., Mar., Mal., Kan., Tam. *Mangusthan*.

280. Melon, musk; **Cucumis melo**
 B. *Kharmuj*; G., H., Mar. P., Tel. *Kharbooja*; Kash. *Kherbuz*; Tam. *Mulam pazham*; Other names: *Cantaloup*; *Madhupaka*.

281. Melon, water: **Citrullus vulgaris**
 B. *Tarmuj*; G., H. *Tarbuji*; Kan. *Kallangadi*; Kash. *He'nd wend*; Mal. *Thannir mathan*; Mar. *Kalingad*; O. *Tarvuja*; P. *Tarbuja*; Tam. *Darbusini*; Tel. *Puchakayi*.

282. Mulberry: **Morus sp.**
 B., Mar. *Tut*; G. *Shetur*; H. *Shahtoot*; Kash. *Tuf*; Kan. *Hipnerle*; Tam. *Musukkottai Pazham*; Tel. *Reshmichettu*.

283,284. Orange: **Citrus aurantium**
 B. *Kamala lebu*; G., P. *Santra*; H. *Narangi*; Kan. *Kithilai*; Kash. *Sangtar*; Mar. *Madhura naranga*; Mar. *Santre*; O. *Kamala*; Tam. *Kichili pazham*; Tel. *Kamala pandu*.

285, 286. Palmyra fruit: **Borassus flabellifer**
 B. *Tal, shah*; G. *Tal*; H. *Tar*; Kan. *Thati nungu*; Mal. *Panam nungu*; Mar. *Shindi shirani*; O. *Tala*; Tam. *Panai nungu*; Tel. *Thati pandu*.

287. Papaya, ripe: **Carcia papaya**
 B. *Pepe (paka)*; G. *Papaya*; H., P. *Papita*; Kan. *Pharangi*; Mal. *Omakai*; Mar. *Popai*; O. *Amrut bhandha (pachila)*; Tam. *Pappali*; Tel. *Boppayi pandu*.

288,289. Passion fruit: **Passiflora edulis**
 G. *Krishna kamal*; Mal. *Kireeda poochad pazham*.

290. Peaches: **Amygdalis persica**
 H., P. *Aarhoo*; Kan. *Marasebu*; Kash. *Tsun'un*; O. *Piccuu*; Other name: *Satalu*.

291. Pears: **Prunus persica**
 B., G., H., Mar., O., P. *Nashpati*; Kan., Tam., Tel. *Berikai*; Kash. *Tang*; Mal. *Sabarjil*; Other name: *Goshbub*.

292. Persimmon: **Diospyros kaki**
 B. *Gav*; H. *Halwa Tendu*; Other name: *Kaki*.

293. Phalsa: **Grewia asiatica**
 A. *Pharaskol*; B., G., H., P. *Falsa*; O. *Mirgichara*; P. *Dhaman*; Tam. *Palisa*.

294. Pine apple: **Ananas comosus**
 B. *Anarash*; G., H., Kan., Mar., P. *Ananas*; Mal. *Kayitha chakka*; O. *Sapuri Anasianas*; Tam. *Anasi pazham*; Tel. *Anasa Pandu*.

295. Plum: **Prunus domestica**
 B., G., H. *Alubokhara*; Kash. *Laar*; P. *Aladu*; Tam., Tel. *Alapagoda*.

296. Pomegranate: **Punica granatum**
 B. *Dalim*; G. *Dalamb*; H., P. *Anar*; Kan. *Dalimbari*; Kash. *Daa'n*; Mal., Tam. *Mathalam pazham*; Mar. *Dalimb*; O. *Dalimba*; Tel. *Danimma pandu*.

297. Prunes: **Prunus salicina**
 Other name: Japanese plum.

298. Pummelo: **Citrus maxima**
 B. *Batabilebu*; G., Mar. *Papnus*; H. *Chakotra*; Kan. *Chakkota*; Mal., Tam. *Bombilimas*; O. *Batapilembu*; Tel. *Pamparananasa*; Other name: Shaddock.

299. Quince: **Cydonia oblonga**
 B. *Bael (bilati)*; H. *Bihi*; Kan. *Seema dalimbe*; Kash. *Bamt soonth*; Tam. *Seemai madalai*; Tel. *Seema danimma*; Other name: *Amritphala*.

300. Raisins: **Vitis vinifera**
 B., G., H., Kash., O., P., Tel. *Kishmish*; Kan. *Drakshi*; Mal. *Mundiringa (unakku)*; Mar. *Manuka*; Tam. *Drakshai*.

301. Raspberry: **Rubus wallichii**
 H. *Rusbhary*.

302. Rose apple: **Syzygium jambos**
 B. *Jamrul*; G. *Gulab jambu*; H. *Gulabjaman*; Kan. *Patneeralai hanu*; Mal. *Jambakka*; Mar. *Jambhool*; O. *Chota pijuli*; Tam. *Pannirkoyya*; Tel. *Jambuneredu*.

303. Sapota: **Achras sapota**
 H., Mal., Tam., Tel. *Sapota*; Mar., P. *Chiku*.

304. Seethaphal: *Annona squamosa*
 B., Q. *Ata*; G., Mar. *Sitaphal*; H., P. *Sharifa*; Kan., Tel. *Seethaphalam*; Mal., Tam. *Seetha Pazham*; Other names: Custard apple; Sugar apple.

305. Strawberry: *Fragaria vesca*
 Kash. *Istabari*

306. Tomato, Ripe: *Lycopersicon esculentum*
 B., H., *Tamator*; G. *Vilayithi vengam*; Kash. *Ruwangum*; Mal., Tam. *Takkali pazham*; Mar. *Velvangi*

307. Tomatillo: *Physalis ixocarpa*
 Other names: Mexican husk tomato, Jamberry.

308. Tree tomato: *Cyphomandra betacea*

309. Wood apple: *Limonia acidissima*
 B. *Kathbel*; G. *Kothu*; H. *Kaith*; Kan. *Bele*; Mal., Tam. *Vilam pazham*; Mar. *Kavath*; O. *Kaitha*; Tel. *Velega pandu*; Other name: Kapith.

310. Zizyphus: *Zizyphus jujuba*
 G., Mar. *Bor*; H. *Ber*; Kan. *Yelachi*; Kash. *Bre'Y*; P. *Amlai*; Mal., Tam. *Elanthapazham*; O. *Barakoli*; Tel. *Regu pandu*; Other names: Jujube; Indian plum.

FISHES AND OTHER SEA FOODS

311. Air: *Mystus seenghala*
 B. *Air*; H. *Ari*; Kan. *Shede*; Mal. *Karatta*; Mar. *Singala*; O. *Alli*; P. *Chaija*; Tam. *Cumboo kelutti*; Tel. *Multi jella*.

312. Anchovy: *Engraulis mystax*
 Kan. *Engallu*; Mal. *Nedumanangu*; Tam. *Poruva*; Tel. *Poracalu*.

313. Bacha: *Eutropiichthys vacha*
 A. *Bacha*; B. *Acha*; H., O. *Bachuva*; P. *Jhalli*.

314. Bam: *Mastocembellus armatus*
 B. *Bam*; O. *Bummi*; P. *Samp machli*; Tam. *Kularal*; Tel. *Mudibommiday*.

315. Baspata machli: *Ailia coilia*
 B. *Kajoli*; O. *Bunsputta*; Tel. *Vella kalada*.

316. Bata: *Chondrostoma gangeticum*
 B. *Bata*

317. Bele: *Glassogobius giuris*
 B. *Bele*; Kan. *Abbrony*; Mal. *Wartee-Poolah*; O. *Gulathi*; Tam. *Nullatan*; Tel. *Bulli-koka*; Other name: Gooloowah.

318. Bhanger: *Mugil tade*

319. B. *Bhangon*; Other name: Dhoka.

320. Bhangan bata: *Labeo bata*
 B. *Bhangan bata*; H. *Gootellah*; O. *Dunguduporah*; Tel. *Mosu*.

321. Bhekти: *Lates calcarifer*

322. B. *Bhekти*; Kan. *Koliji*; Mal. *Chemballi*; Mar. *Khajura*; O. *Durrah*; Tam. *Painnee meen*; Tel. *Pandu chapa*.

323. Bhole: *Serranus lanceolatus*
 Tam. *Wuttacollawah*; Tel. *Suggalahtubontu*.

324. Big-jawed jumper: *Lactarius lactarius*
 Kan. *Adai meenu*; Mal. *Adavu*; Tam. *Guthipu*; Tel. *Suduma*.

325. Boal: *Wallago attu*
 B. *Boal*; H. *Boalee*; Kan. *Bahle*; Mal. *Attuvalai*; Mar. *Shivda*; Tam. *Valai*; Tel. *Valuga*.

326. Bombay duck: *Harpodon nehereus*
 B. *Nehare*; Kan., Mar. *Bomblu*; Mal. *Bummili*; Tam. *Vangaravasi*; Tel. *Vanamathlu*.

327. Blue Mussel: *Mytilus viridis*

328. Cat fish: *Arius sona*
 Kan. *Shede*; Mal. *Valia etta*; Mar. *Shingala*; Tam. *Keluthi*; Tel. *Jellalu*.

329,330. Chela: *Chkela phulo*
 B. *Chela*; H. *Dunnahru*.

331. Chingru: *Paloemuscarcinus (Prawn)*
 B. *Chingru*

332. Chingri, goda: *Macrobrachium rufid*
 B. *Goda chingri*

333. Chital: *Notopterus chitala*
 B., O. *Chital*; Tam. *Ambattan-wal*.

334. Crab: *Paratephusa spinigera*

335. B. *Kankra*; G. *Karachlo*; H. *Kenkra*; Kan. *Aedi*; Mal., Tam. *Nandu*; Mar. *Khekra*; O. *Kankada*; Tel. *Peetha*.

336. Folui: **Notopterus notopterus**
 B. *Folui*; H. *Pholi*; Kan. *Pappasi*; O. *Pulli*;
 Tam. *Chotta valai*; Tel. *Mangali Kathi*.

337. Ghol: **Sciane miles**
 H. *Dhoma*; Tam. *Vella-katteelee*.

338. Goggler: **Caranx crumenophthalmus**
 Kan. *Banguda hedday*; Mal. *Chamban*;
 Mar. *Labi*.

339. Herring, Indian: **Pellona brachy-soma**
 Mal. *Kannan mathi*; O. *Paunia puiee*.

340. Herring, ox-eyed: **Megalops cyprinoides**
 Kan. *Selakku*; Mal. *Valathan*; O. *Punni kowu*;
 Tam. *Morancundai*; Tel. *Kannangi*.

341. Hilsa: **Clupea ilisha**
 B., H. *Hilsa*; Kan. *Paliya*; Mal. *Paluva*;
 Mar. *Pala*; Tam. *Oolum*; Tel. *Palasa*.

342. Horse mackerel: **Caranx melampygus**
 Mal. *Ovupara*; Tel. *Kuroogooparal*.

343. Indian whiting: **Sillago sihama**
 Kan. *Kane*; Mal. *Poozhan*; Mar. *Murdi*;
 Tam. *Kellakkan*; Tel. *Shorangi*.

344. Jew fish (kora): **Pseudosciaena coibor**
 Mal. *Kora*; Tam. *Vella Kattelee*.

345. Jew fish (pallikora): **Otolithes ruber**
 Mal. *Pallikora*; O. *Birrali*.

346. Kalabasu: **Labeo calbasu**
 B. *Kalvus*; H., O. *Kala-beinse*; Kan. *Kaghi*;
 Mal. *Karthamin*; Mar. *Kanoshi*;
 P. *Dhai*. Tam. *Kakkameen*; Tel. *Kaki bontha*; Other name: *Khursha*.

347. Katla: **Catla catla**
 B., H. *Katla*; Mal. *Karakatla*; Mar. *Tambra*; O. *Barkur*; Tam. *Theppu meenu*;
 Tel. *Botchee*.

348. Khorsula: **Mugil corsula**
 B. *Khorsula*; H. *Answari*; Mal. *Thiruta*; O. *Kakunda*.

349. Khoyra: **Gonialosa manminna**

350. B. *Khoyra*.

351. Koi: **Anabas testudineus**
 B., O. *Koi*; Mal. *Undee-collee*; Tam. *Sennal*.

352. Koocha machli: **Amphipnous cuchia**
 B. *Kucha*; Other name: *Andha samp*.

353. Lata: **Ophiocephalus punctatus**
 A. *Gorissa*; B. *Lata*; H. *Phool dhok*; Kan. *Karava*;
 Mal. *Kayichal*; O. *Gorissa*; P. *Daula*; Tam. *Korava*; Tel. *Mitta*.

354. Lobster: **Palaemon sp**
 B. *Mocha chengdi*; Mal. *Konchu*.

355. Mackerel: **Rastrelliger kanagurta**
 Kan. *Bangadei*; Mal. *Ayila*; Mar. *Kaulagedar*; Tam. *Kanankeluthi*.

356. Magur: **Clarias batrachus**
 B. *Magur*; H. *Mangri*; Mal. *Yari-vahlay*;
 O. *Magurah*; Tam. *Masarai*; Tel. *Marpoor*.

357. Mahasole: **Barbus tor**
 B. *Mahasole*; H. *Naharm*; Kan. *Peruval*;
 Mal. *Meruval*; Mar. *Khadchi*; O. *Kajra*;
 Tam. *Kuil*; Tel. *Pedda-polika*.

358. Mandeli: **Coilia dussumieri**

359. Mrigal: **Cirrhinus mrigala**
 B. *Mrigal*; H. *Naim*; O. *Mirgah*; P. *Mori*;
 Tel. *Yerra mosu*.

360. Mullet: **Mugil oeur**
 B. *Ain*; Kan. *Mala*; Mal. *Elameen*; O. *Khoiriga*;
 Tam. *Madavai*; Tel. *Kathi peraga*.

361. Mushi

362. Mussel, Fresh water.

363. Moti (Pearl)

364. Oil Sardine: **Sardinella longiceps**
 Kan. *Baige*; Mal. *Nallamathi*; Mar. *Torli*;
 Tam. *Paichalai*; Tel. *Noonekavallu*.

365. Pabda: **Callichorus pabo**
 B. *Pabda*.

366. Pangas: **Pangasius pangasius**
 B. *Pangas*; H. *Pangsa*; O. *Jellum*; Tam. *Kovailoola-keluthi*; Tel. *Choluva jella*.

367. Parsey: **Mugil parsia**

368. B. *Parsey*; Mal. *Malan*; Tam. *Chirayakandai*.

369. Pomfret, black: **Formio niger**
 Kan. *Chandratya*; Mal. *Karuppu avoli*;
 Mar. *Halva*; O. *Bahal*; Tam. *karuppu-vowal*; Tel. *Nalla sandawah*.

370. Pomfret, white: **Stromateus sinensis**
 B. *Chanda*; Kan. *Thondrotte*; Mal. *Vella awoli*; Mar. *Chandava*; O. *Bahal*; Tam. *Mogang vavval*; Tel. *Chanduva*.

371. Prawn: **Penaeus sp.**
 B. *Chingri*; Kan. *Segedi*; Mal. *Chemmeen*; Tam. *Yera*; Tel. *Royya*.

372. Puti: **Burbus sp.**

373. Ravas: **Polynemus tetradactylus**
 B. *Gurjowli*; Kan. *Vahmeenu*; Mal. *Bahmeen*; Mar. *Ravas*; Tam. *Puzhakkala*; Tel. *Budathamaga*; Other name: *Guchhai*.

374. Ray: **Rhinoptera sewelli**
 Mal. *Neithirandi*

375. Ribbon fish: **Trichiurus sp.**

376. B. *Rupa patia*; Kan. *Pambole*; Mal. *Vellithalayam*; Mar. *Pitiurti*; O. *Puttiah*; Tam. *Savalai*; Tel. *Savala*.

377. Rohu: **Labeo rohita**
 B. *Ruee*; H., O. *Rohu*; Mar. *Tambada-massa*.

378. Sardine: **Sardinella fimbriata**
 B. *Khaira*; Kan. *Pedi*; Mal. *Chala-mathi*; Mar. *Pedwa*; Tam. *Seedai*; Tel. *Kavallu*.

379. Sarputi: **Barbus sarana**
 B. *Sarputi*; H. *Giddi-kaoli*; Kan. *Gid pakka*; Mal. *Pullan*; O. *Sarana*; Tam. *Kendai-meen*; Tel. *Paraga*.

380. Shark: **Carcharias sp.**
 B. *Hangoor*; K. *Bugga kuruvai*; Mal. *Voliyasravu*; Mar. *Waghsheer*; Tam. *Soorah*; Tel. *Sora chapa*.

381. Shrimp

382. Seer: **Cybium guttatum**
 B. *Bijram*; Kan. *Khulkul*; Mar. *Towar*; Mal. *Varimeen*; Tam., Tel. *Vanjram*; Other name: *Ayakora*.

383. Silver belly: **Leiognathus insidiator**
 Mal. *Chakra mullan*

384. Singhal: **Arius dussumieri**
 Kan. *Mongam shede*; Mal. *Valiaatta*; Mar. *Singhal*; Tam. *Mandaivalai*; Tel. *Jadi-jella*.

385. Singh: **Saccobranchus fossilis**
 B., H., O. *Singhi*; Kan. *Chelumeenu*; Mal. *Kahree meen*; Mar. *Bitchuka machi*; P. *Noorie* Tam. *Thelimeen thayi-lee*; Tel. *Mapujella*;

386. Sole: **Ophiocephalus striatus**
 B. *Shol*; H. *Morrul*; Kan. *Poolikuchi*; Mal. *Kannan*; Mar. *Sohr*; O. *Sola*; Tam. *Virahl*; Tel. *Korrameenu*.

387. Sole (Malabar): **Cynoglossus semifasciatus**
 B. *Kukurjibli*; Kan. *Nangu*; Mal. *Manthal*; Mar. *Rhepti*; Tam. *Aral*; Tel. *Jeripothu*.

388. Surmai: **Cybium commersoni**

389. B. *Champa*; Kan. *Arkulai*; Mal. *Chumbum*; Mar. *Tuvaranjari*; Tam. *Mah-wu-laachi*; Tel. *Konema*.

390. Tapra

391. Tapsi: **Polynemus paradiseus**
 B. *Tapsi*; Other name: *Mango fish*.

392. Tartoor: **Opisthoterous tardoore**
 Mal. *Ambatta*; Tel. *Tartoor*.

393. Tengra: **Mystus vittatus**.

394. B. *Tengra*; Mal. *Kallan-Cooree*; O. *Kuntiah*; Tam. *Auppan keluthi*; Tel. *Yerra jella*.

395. Tunny: **Thynnus macropterus**

396. White bait: **Anchoviella sp.**

MEAT AND POULTRY

397. Beef: **Bos taurus**

398. B. *Go-mangso*; G. *Go-mass*; H. *Gai-ka-gosht*; Kan. *Danda mamsa*; Mal., Tel. *Go-mamsam*; Mar. *Go-mans*; O. *Go-mansa*; Tam. *Mattu eraichi*.

399. Buffalo meat: **Bulbus bubalis**
 H. *Bhains-ka-ghost*; Mal. *Pothiraichi*; Tam. *Erumai iraichi*; Tel. *Barre mamsam*.

400. Duck: **Anas platyrhyncha**
 B. *Hansh*; H. *Bathak*; Mal. *Tharavu*; Mar. *Badok*; Tam. *Vathu*; Tel. *Bathu*.

401. Egg, duck
 B. *Hansher dim*; G. *Batak nu indu*; H. *Bathak-ka-anda*; Kan. *Bathu motte*; Kash. *Batakh thul*; Mal. *Tharavu Mutta*; Mar. *Badak ande*; O. *Batak dimba*; P. *Bathak-da-anda*; Tam. *Vathu muttai*; Tel. *Bathu Guddu*.

402. Egg, hen
 B. *Dim (murgi)*; G. *Murgi-nu-indu*; H. *Murgi-ka-anda*; Kan. *Koli motte*; Kash. *Kokar thul*; Mal., Tam. *Kozhi mutta*; Mar. *Konibdiande*; O. *Kukkuda dimba*; P. *Kukdi-da-anda*; Tel. *Kodi guddu*.

403. Egg, turtle:
 B. *Jagol dim*; H. *Katchua ka anda*; Mal. *Ama mutta*.

404. Finch: **Fringillidoe**
 H. *Bageri*

405. Fowl: **Gallus bankiva murghi**
 B. *Murgi*; H., P. *Murga*; Kash. *Kuakur*; Mal., Tam. *Kozhi*; Mar. *Kombdi*; Tel. *Kodi*; Other name: Chicken.

406. Goat meat: **Capra hyrcanus**
 B. *Pantar mangso*; H. *Bakri-ka-gosht*; Mal., Tam. *Attiraichi*; P. *Bakri da mas*; Tel. *Meka mamsamu*.

407. Grey quail: **Coturnix coturnix**
 H. *Ghagasbater*

408. Liver, goat: **Capra hyrcanus**
 B. *Pantar mettle*; H. *Khasi ka jigar*; Mal., Tam. *Attueeral*; P. *Bakri da kaleji*; Tel. *Meka karjamu*.

409. Liver, sheep:
 B. *Mete (vera)*; G. *Kaleju*; H. *Kaleji (bher)*; Kash. *Kreñnu maaz*; Mal., Tam. *Semmarattin eeral*; Mar. *Kaleej*; O. *Mendha Kalija*; P. *Bhed-di-kaleji*; Tel. *Gorre karjamu*.

410. Mutton:
 B. *Vera mangso*; G. *Ghetanu gos*; H. *Bakri ka gosht*; Kan. *Mamsa*; Kash. *Maaz*; Mal., Tam. *Attiraichi*; Mar. *Mans sheli*; O. *Manai sa cheli*; P. *Mas*; Tel. *Mamsamu*.

411. Pigeon: **Columba livia intermedia**
 B. *Pyara*; H., P., Mar. *Kabutar*; Kash. *Katar Maaz*; Mal. *Pravu*; Tam. *Pura*; Tel. *Pavuramu*.

412. Pork: **Sus cristatus Wagner**
 B. *Sukar mang so*; G. *Suvarnu mas*; H. *Suar ka gosht*; Kan. *Handi mamsa*; Mal., Tam. *Panni iraichi*; Mar. *Mans (dukar)*; O. *Ghusuri mansa*; P. *Soor da mas*; Tel. *Pandi mamsamu*; Other name: Varaha

413. Ruff and Reeve: **Philomachus pugnax linn**
 H. *Chaha (bara)*

414. Snail, small: **Viviparus bengalensis F. typica (Lamarck)**
 B. *Samuk*; H. *Changhi*; Mal. *Ochu (Cherutharam)*; Mar. *Saap*.

415. Snail, big: **Pila globosa**
 B. *Samuk*; H. *Ghongha*; Mal. *Ochu (Valiatharam)*.

416. Turtle's meat:
 B. *Jagol mangse*; H. *Kachua-ka-gosht*; Mal., Tam. *Amai traichi*.

417. Venison: **Antilope cervicapra Linn**
 H. *Haran-ka-gosht*; Mal., Tam. *Man iraichi*; Mar. *Phandayat*; Tel. *Ledi mamsamu*; Other name: Ena

MILK AND MILK PRODUCTS

418. Milk Ass's:
 H. *Gadhe-ka-doodh*; Mal., Tam. *Kazhu-tha pal*; P. *Kothi-da-doodh*; Tel. *Gadida palu*.

419. Milk, buffalo's:
 B. *Doodh (mosher)*; G. *Bhesnu doodh*; H. *Bhains-ka-doodh*; Kan. *Uetme halu*; Kash. *Maa'shi duad*; Mal., Tam. *Erumaipal*; Mar. *Doodh (Maish)*; O. *Mainsi dudha*; P. *Mahin-da-doodh*; Tel. *Barre palu*.

420. Milk, cow's:
 B. *Doodh (garu)*; G. *Gayanu doodh*; H. *Gai-ka-doodh*; Kan. *Hasuvina halu*; Kash. *Gaav duad*; Mal., Tam. *Pasum pal*; Mar. *Doodh (gay)*; O. *Gaidudha*; P. *Gau-da-doodh*; Tel. *Avu palu*.

421. Milk, goat's
 B. *Doodh (chagal)*; G. *Bakrinu doodh*; H. *Bakri-ka-doodh*; Kan. *Adina halu*; Kasl. *Tshaavgi chir*; Mal., Tam. *Attu pal*; Mar. *Doodh (sheli)*; P. *Bakri-ka-doodh*; Tel. *Meka palu*.

422. Milk, human
 B. *Doodh (Manush)*; G. *Strinu doodh*; H. *Aurat ka doodh*; Kan. *Yede halu*; Mal. *Mula pal*; Mar. *Doodh (Stri)*; O. *Maa dudha*; P. *Janani-da-doodh*; Tam. *Thai pal*; Tel. *Chanu palu*.

423. Curds:
 B. *Dayi*; G., H., Mar., O., P. *Dahi*; Kan. *Mosaru*; Kash. *Zaamut duad*; Mal., Tam., *Thayir*; Tel. *Perugu*; Other names: Yoghourt, Sour cream.

424. Butter milk
 B. *Ghol*; G. *Chas*; H., P. *Lassi*; Kan. *Majjige*; Kash. *Chuaku duad*; Mal., Tam. *Moru*; Mar. *Tak*; O. *Ghola dahi*; Tel. *Majjiga*.

425. Skimmed milk, liquid

426. B. Chana. Cow milk

427. Channa buffalo's milk
 B., G., H., P. *Paneer*; Kan. *Ginnu*; Kash. *Tsaama*; Mal., Tam. *Pal Katti*; O. *Chhena*; Tel. *Junnu*.

428. Cheese
 B., H., P. *Kheer*.

429. Khoa (whole buffalomilk)

430. Khoa
 B., H., Kan., Mal., P., Tel. *Khoa*; O. *Kua*; Tam. *Thirattu pal*.

431. Skimmed milk

432. B. *Makhantana doodh*; Kash. *Gurus*; Mal. *Padakalanya pal*; O. *Sarakadha dudha*; Tam. *Kudaintha pal*; Tel. *Venna theesina palu*.

433. Whole milk powder
 B. *Goora doodh*; Tam. *Palthool*; O. *Dudha gunda*; Tel., Mal. *Pala podi*.

FATS AND EDIBLE OILS

434. Butter
 B., H., P. *Makhan*; Kan. *Benne*; Kash. *Thany*; Mal., Tel. *Venna*; Mar. *Loni*; Tam. *Vennai*.

435. Ghee (cow)

436. B., H., P. *Ghee*; Kan. *Thuppa*; Mal. Tam. *Nevy*; Mar. *Thup*; Tel. *Neyyi*.

437. Hydrogenated oil
 B. *Banaspati*; Other names: *Vanaspati*; Vegetable ghee.

438. Vegetable cooking oil
 B., H., Mar., Tel., Kan., Mal. *Enne*; Tam. *Ennai*; Tel. *Noone*.

SUGARS

439. Cane sugar: *Saccharum officinarum*
 B., H., P. *Chini*; Kan. *Sakkare*; Kash. *Madrar*; Mal. *Panchasara*; Tam. *Sarkarai*; Tel. *Pancha dara*; Other name: *Sakkar*.

440. Honey:
 B. *Mou*; H. *Shaid*; Kan. *Tenthuppa*; Kash. *Maanch*; Mal., Tam. *Then*; Mar. *Madh*; Tel. *Thene*; Other name: *Madhu*.

441. to 445 Jaggery: *Saccharum offinarum*
 B., H., P. *Gud*; G. *Gol*; Kan. *Bella*; Kash. *Gor*; Mal., Tam. *Vellam*; Mar. *Gul*; O. *Guda*; Tel. *Bellam*.

446. Sago:
 B. *Saboo*; G., Mar. *Sabu dana*; H., Mal. *Sago*; Kan. *Sabbakki*; Kash. *Saboo dana*; O. *Sagu dana*; Tam. *Javarisi*; Tel. *Saggu biyyam*.

447. Pachwai (Assam)

448. Toddy

449. B. *Tari*; H. *Tarail*; Kan. *Henda*; Mal., Tam., Tel. *Kallu*; Mar., O. *Tadi*.

450. Neera

451. Sugar cane juice:
 B. *Ikkhu raush*; G. *Sherdina ras*; H. *Ganne-ka-ras*; Kan. *Kabbina halu*; Mal. *Karumbin neeru*; Mar. *Usacha rasa*; O. *Akhju dorua*; P. *Ganne-da-ras*; Tam. *Karuppan charu*; Tel. *Cheraku Rasam*; Other name: *Sarkara*.

452. Amaranth seed: *Amaranthus* sp.
 Mal. *Cheera vithu*; Tam. *Keerai vidai*; Tel. *Thotakoora ginjalu*; Other name: *Arikisira*.

453. Bamboo seeds: **Bambusa arundinacea**
 A. *Kotoha*; B. *Banser dhana*; H. *Banse-ke-beej*; Kan. *Biduru*; Mal. *Mulaari*; Tam. *Moongil arisi*; Tel. *Vedura biyyam*; Other names: *Vansh*.

454. Banti: **Echinochloa stagnina**
 B. *Dul*; Kan. *Kadu debhai hullu*; Mar. *Banti*; Tel. *Bontha oddu*.

455. Buck wheat: **Fagopyrum esculentum**
 A. *Doron*; B. *Titaphapur*; H., Mal., Mar., Tam. *Kootu*; P. *Davan*

456. Chenopodium album: See Sr. No. 59.

457. Cowage seed flour: **Mucuna capitata**
 H. *Kabach sattoo*

458. Dainchaseeds: **Sesbania cannabina**
 G. *Ikad*; H. *Dhunchi*; Mal. *Killannu*; Mar. *Ranshevari*; Tam. *Mullagathi*; Tel. *Errajiluga*; Other name: *Jayanti*

459. Job's tears: **Coix Lachryma**
 B. *Gurgur*; H. *Sankru*; Mar. *Ranmakka*; Tam. *Netpavalam*. Other names: *Jargadi*.

460. Oatmeal: **Avenabyzantina**
 B. *Jai*; G., H., Mar., Jav; Tel. *Yavalu*.

461. Kittul flour: **Caryota urens**
 G. *Shivajata*; H. *Mari*; Kan. *Bagani*; Mal. *Kudappan mavu*; Mar. *Berli*; Tam. *Coomdapanaai*; Tel. *Jiluguchettu*. Other name: *Talipot flour*; mada.

462. Lotus seeds: **Nelumbium nelumbo**

463. Makhana: **Euvvale ferox**
 B., G., H. *Makhana*; O. *Kuntapadamu*; P. *Jewar*; Tel. *Melluni Padmamu*.

464. Rajkeera seeds: **Amaranthus paniculatus**

465. Water lily seeds: **Nymphaea nouchali**

466. Goa beans: **Psophocarpus tetragonolobus**

467. Malmandi: **Indigofera glandulosa**

468. Sutari: **Phaseolus calcaratus**
 H. *Sutri*; P. *Ghurush*; Other name: Rice bean

469. Bamboo tender shoots: **Bambusa arundinacea**
 B. *Bansher-ankur*; G. *Vasasni kupal*; H. *Bans*; Mal. *Mulan koombu (elayo)*; Mar. *Kulkipan*; O. *Baunsa gaja*; Tam. *Moongil kuruthu*; Tel. *Veduru chiguru*; Other names: *Chakratvans*.

470. Ceylon pasali: **Talinum triangulare**
 Tam. *Ceylon pasali*.

471. Chimti sag: **Polygonum plebijum**
 B. *Chemtisag*; G. *Zinakookhard*; Kan. *Sirange soppu*; O. *Muthisaga*.

472. Giria sag: **Suaeda nudiflora**
 H. *Giria sag*; Mar. *Moras*.

473. Gulcharni: **Calonyction muricatum**
 B., H. *Michai*; G. *Garayo*; Mar. *Bhonavari*; Tam. *Kathutali*.

474. Kasinikeerai; **Raphanus sp.**
 Tam. *Kasini keerai*

475. Kathasag: **Dentella repens**

476. Kenasag: **Commelina benghalensis**
 B. *Dolopata*; H. *Kenasag*; Mar. *Kena*; Tel. *Vennadenikoora*; Tam. *Kamavazhar*.

477. Khesari leaves; **Lathyrus sativus**
 B., H., O. *Khesarisag*; G. *Lang*; Mar. *Lakh*; P. *Kisari*; Other names: *Lakkodi*; *Charal*.

478. Koila karhasag: **Astercantha longifolia**
 B. *Kuliakhara*; H., Mar. *Talma khana*; Tam. *Nirmulli*; Tel. *Neerugubbi*, Other name: *Kokilasha*.

479. Kohar sag: **Bauhinia purpurea**
 B., Mar. *Devakanchan*; H. *Khairwal*; Tam. *Mandari*, Tel. *Kanchanam*.

480. Korla leaves: **Bauhinia malabarica**
 B. *Karmai*; H. *Amlid*; Mar. *Korla*; Tel. *Pulishinta*.

481. Manalkeerai: **Mullugo sp**
 H. *Baluka sag*; Ma. *Waluchibhaji*; Tam., Mal. *Manal keerai*; Tel. *Isakadasari koora*.

482. Matasag: **Antidesma diandrum**
 B. *Mutta*; H. *Amari*; Tel. *Manchipulleri*.

483. Nachukottai keerai:
 Tam. *Nachukottai keerai*

484. Neem leaves: *Azadirachta Indica*

485. B. *Neempata*; G. *Lindolimba*; N. *Neem ke patti*; Kan. *Bevu*; Mal. *Arya veppila*; Mar. *Kadulimb*; O. *Nima patra*; P. *Nim*; Tam. *Veppilai*; Tel. *Vepa akulu*; Other name: *Nimba*.

486. Pacharisi keerai: *Euphorbia hirta*; Mar., H. *Dudhi*; Mal. *Nelapalai*; Tam. *Pacharisi keerai*; B. *Baro kherai*; G. *Dubeli*.

487. Panna Keerai: *Celosia sp.*
Tam. *Panna keerai*.

488. Parwar sag: *Trichosanthes dioica*
B. *Potal sag*; G. *Parwalne pan*; H. *Parwar sag*; Kan. *Kadupala vala*; Mal. *Patolam*
Mar. *Paduwal*; Tam. *Kombupodalai*; Tel. *Kommu potla*; Other name: *Patalika*.

489. Pasarai keerai: *Portulaca sp*
Tam. *Pasarai keerai*

490. Patua sag: *Corchorus capsularis*
A. *Titamara*; B. *Chinalitapat*

491. Potato leaves: *Solanum tuberosum*
B., H. *Alu sag*; G., Mar. *Batata*; Kan. *Alu yele*; Mal., Tam. *Urula kizhangu ilagal*; P. *Alu de patte*; Tel. *Alugadda akulu*.

492. Puliara keerai
Tam. *Puliara keerai*

493. Punnaku Keerai: *Corchorus acutangulus*
Tam. *Punnaku keerai*

494. Perandai: *Vitis quadrangularis*
B. *Har*; G. *Chodhari*; H. *Hadjora*; Kan. *perundai*; Mal., Tam. *Perandai*; Mar. *Chaudhri*; O. *Siju*; Tel. *Nalleru*; Other name: *Asthisamhara*;

495. Saravallai keerai: *Trianthema monogyna*
B. *Lovet sabuni*; H. *Khapra sag*; Kan. *Muchchugoni*; Mar. *Pundhari ghentuli*; Mal. *Pasali keerai*; Tam. *Saravallai keerai*; Tel. *Galijeru*; • Other name; Horse purslane.

496. Sarli sag: *Vangueria spinosa*
B., H., *Muyuna*; G., Mar. *Alu*; Kan. *Mullakare*; Tam. *Munakkarai*; O. *Gurbeli*; Tel. *Visikilamu*; Other name: *Atu*.

497. Seemai Ponnanganni: *Alternanthera sp*
A. *Sessilis*; Mal., Tam. *Seemai ponnanganni*; Tel. *Ponnangati kura*.

498. Sinduar sag: *Celosia argentia*
B. *Swet murga*; G. *Lapadi*; H. *Safaid murga*; Mar. *Kurdu*; P. *Sarwali*; Tel. *Gurugu*; Other name: *Vitunna*.

499. Sinduar sag (wild): *Allmania polygonoides*

500. Sonchal sag: *Malva parviflora*
H. *Panirak*; P. *Supra*; Other name: *Supra*.

501. Soya leaves: *Glycine max*
B. *Gourikalai sag*; H. *Soya-ka-sag*; Mal. *Soya ilagal*; O. *Soya patra*.

502. Sweet potato greens: *Ipomoea batatas*
B. *Rangalu sag*; G. *Kanangi*; H., P. *Shakarkand sag*; Kan. *Gensina yele*; Mal. *Madhura Kizhangu ilagal*; Mar. *Ratalu*; Tam. *Vallikizhangu ilai*; Tel. *Chilagoda dumpa akulu*.

503. Thooduvalai keerai: *Solanum sp.*
Tam. *Thkooduvalai keerai*

504. Veethi keerai: *Cadalia indica*
Tam. *Veethi keerai*

505. Velai keerai: *Hydroclea sp*
Tam. *Velaikeerai*

506. Vella keerai: *Cleome viscosa*
B. *Hurhuria*; G. *Talvani*; H. *Belaigori sag*; Kan. *Nayibela*; Mal. *Ariavila*; Mar. *Kamphuti*; Tam. *Vellakeerai*; Tel. *Gominta*; Other name: *Aditya bhakta*

507. Water cress: *Nasturtium officinale*
G. *Asalia*; H. *Chandrasur*; Kan. *Alvi*; Mar. *Ahliv*; O. *Brahmi sag*; P. *Piriyahalim*; Tam. *Alli ilai*.

508. Bokwa: *Dioscorea pentaphylla*
B. *Suaralu*; H. *Kanta alu*; Kan. *Nuraigenaru*; Mal. *Nurunna Kilangu*; Mar. *Ulassi*; Tam. *Kathu kizhangu*; Tel. *Dooka pendalamu*; Other names: *Kulu*, *Tigo*.

509. Budhia: *Malothria heterophylla*
B. *Kudari*; H. *Anantmul*; Mal. *Nierinaganpuli*; Mar. *Gometta*; O. *Karakla*; Tam. *Pulivanji*; Tel. *Thiyya donda*.

510. Bidroot: **Scirpus grossus**
 G. *Gundaro*; Mar. *Kasara*; O. *Santara*; Tel. *Gundu thungagaddi*; Other name: *Kuseruka*.

511. Canna, edible: **Canna edulis**

512. Chumbia: **Dioscorea hamiltonii**.

513. Churkia: **Dioscorea glabra**
 Tel. *Naratega*; Other name: *Baiyang*

514. Epedong sanga: **Peucedanum nagpurensse**

515. Garmer: **Coleus barbatus**

516. Jipoo sanga: **Habenaria cammelinifolia**

517. Lotus root: **Nelumbium nelumbo**
 B. *Padma*; G. *Surya kamal*; H. *Kamal-ki-jodh*; Kan. *Kamla dambu*; Kash. *Nadur*; Mal., Tam. *Thamara kizhangu*; Mar. *Kamal*; O. *Padam*; Tel. *Thamara dumpa*; Other Name: Ambuja.

518. Moor sanga: **Butea frondosa**
 B. Mar., Mal. *Palas*; G. *Khakra*; Kan. *Muthunga*; Tam. *Parasa*; Tel. *Moduga*; Other name: Palasha.

519. Murum sanga: **Dioscorea spinosa**

520. Ochen sanga: **Momordica cochin chinensis**
 B. *Golkakra*; H. *Gulkara*; Tel. *Adavikakara*.

521. Song: **Dioscorea anguiera**
 B. *Kukralu*; H. *Kasalu*.

522. Turum sanga: **Curculigo orchioides**.
 B. *Talamuli*; H. *Kalimushi*; Kan. *Nelatigadde*; Tam. *Nilappanai Kizhangu*; Tel. *Nelathati gadda*; Other name: *Mushali*.

523. Water lily: **Nymphaea nouchali**

524. B. *Shaluk*; G. *Kamal*; H. *Kanval*; Kan. *Nyadale huva*; Mal. *Periambal*; Mar. *Lalkamal*; Tam. *Alli (amarai)*; Tel. *Allitamara*.

525. Agathi flowers: **Sesbania aegyptiaca**
 G. *Agathio*; H. *Agasth-ka-phool*; Kan. *Agase*; Mal. *Akatthe*; O. *Buko*; Mar. *Aagasta*; Tam. *Agathi*; Tel. *Avesi*. Other name: *Agati*.

526. Artichoke: **Cynara scolymus**
 B., H. *Hathichak*.

527. Bagnaha: **Capparis horrida**
 B. *Kalokera*; H. *Ardanda*; Kan. *Tottulla*; Mar. *Govindi*; P. *Karvilla*; Tam. *Adondai*; Tel. *Adonda*; Other names: *Wag*; *Karambia*.

528. Borooee, Raw: **Gardenia gummifera**
 B., G., H., Mar. *Dikamali*; Kan. *Dikemalli*; Tam. *Dikamalli*; Tel. *Tellamanga*; Other name: *Pindana*.

529. Chaltha: **Dillenia indica**
 B., H. *Chalta*; G., Mar. *Karambel*; Kan. *Betta*; Mal. *Chalitha*; Tam. *Una*; Tel. *Pedda kalinga*; Other name: *Uva*.

530. Kanthankathiri: **Solanum Xanthocarpum**
 B. *Kantakari*; G. *Bhony ringni*; H. *Kateli*; Mal., Tam. *Kandan Kathiri*; O. *Bheji baigana*; Tel. *Vakudu mulaga*.

531. Lotus seeds; green: **Nelumbium nelumbo**
 Mal. *Thamara vithu*; Tel. *Thamara ginjalu*.

532. Madapuginja
 O. *Ganjei*

533. Mushroom
 H. *Tila chhattoo*; Mal. *Koon*; P. *Khumb*; Tam. *Kalan*; Tel. *Kukkagodugu*.

534. Phutka chattoo (Rugroo) **Lycoperdon sp.**
 Other name: Puffball mushroom

535. Nisorha flowers: **Cardia dichotoma**
 B. *Bahubara*; G. *Bargund*; H. *Losora*; Kan. *Chikka challe*; Mal. *Cheruviri*; Mar. *Shelvant*; Tam. *Natuvili*; Tel. *Chinnanakkeru*; Other name: *Bahuvaraka*.

536. Rhubarb stalks: **Rheum emodi**
 B. *Reuchini danta*; G. *Gamini revanchini*; H. *Revandchini*; K. *Natarevachirmi*; Mal. *Variyath thandu*; Tel. *Natupasupu*; Other name: *Ghandhini*.

537. Sanga-ka-phal: **Dioscorea puber**
 B. *Kukralu*; H. *Kasualu*.

538. Sannhemp flowers: **Crotalaria juncea**
 B. *Shon*; H. *Sanai-ka-phool*; Kan. *Sanalu*; Mal. *Wucka poo*; Mar. *Tag*; Tam. *Sannappu sanal*; Tel. *Janumu puvvu*; Other name: *Sana*.

539. Sea weeds

540. Mal. *Kadalchandi*; Tam. *Kadalpasi*.

541. Silk cotton flowers: **Bombax malabaricum**
B. *Simul*; G. Sawar; H. *Semal-ka-phool*; Kan. *Reshme hattine huvu*; Mal. *Poola Poo*; Mar. *Saur*; O. *Bouro*; Tam. *Illavam puvu*; Tel. *Boorugu puvvulu*; Other name: Salmali.

542. Tetrolobar bean: **Lotus tetragonolobus**.
H. *Hatna-sirmi*; Other name: Winged pea.

543. Water lily flowers: **Nymphaea nouchali**
G. *Nilopal*; H. *Bhent-ka-phool*; Mal. *Vellambal poo*; P. *Chota kanwal*; Tam. *Allithamara*; Tel. *Tella kaluva*.

MISCELLANEOUS FOODS

544. Adda: **Bauhinia vahlii**
Tel. *Adda*; Other name: *Lama-ke-biya-ka gudda*

545. Jungli badam: **Sterculia foetida**
B., H., Mar. *Junglibadam*; Kan. *Batalapenari*; Mal. *Potta Kavalam*; Tam. *Pottaikavalam*; Tel. *Yenugabadam*.

546. Oysternut: **Telfairea pedata**

547. Mango seed kernel: **Mangifera indica**
H. *Am-ka-guthli-ka-atta*; Mal. *Manga andi parippu*; P. *Am-di-guttak*; Tel. *Mamidi Jeedi*; Other name: Amra

548. Roselle seeds:
B. *Labmista*; H., Mar. *Lalambari*; Tel. *Yerragogu*. Tam. *Gogu*.

549. Bajjar Bhang.

550. Tamarind seed kernel: **Tamarindus indicus**
H. *Imli-ka-biya-ka-gudda*; Mal. *Pulin kuru*; Tam. *Puliamkottai*; Tel. *Chinta ginjala paluku*.

551. Pumpkin seeds: **Cucurbita maxima**
B. *Kumdar dana*; Mal. *Mathan vithugal*; P. *Sitaphal-di-bee*; Tel. *Gummadi ginjalu*.

552. Okra (whole seed) See Sr. No. 166.

553. Okra (Kernal)

554. Cleome viscosa (Vellakeerai)

555. Marking nut: **Semecarpus anacardium**
B., H. *Bhela*; Mal. *Cheru*; Mar. *Bikka*; Tel. *Nall jeedi ginjalu*. Other name: *Velwa-ka-topi*.

556. Baincha: **Flacourtie indica**
B. *Baincha*; H. *Bilangra*; Mar. *Kaker*; Tam. *Sottaikala*; Tel. *Kandregu*; Other names: Baichi; Batoko plum.

557. Bamboo fruit: **Bambusa arundinacea**
B. *Banser phal*.

558. Black berry: **Rubus fruticosus**.
H. *Vilaiti-anchu*; P. *Alish*; Other name: Bramble.

559. Borooee: **Gardenia gummifera**
B., G., Mar., H. *Dikamli*; Tam. *Dikka malli*; Tel. *Tellamanga*.

560. Carambola: **Averrhoa carambola**
H. *Kamrakh*.

561. Cherimoyer: **Annona cherimolia**
H. *Hanuman phal*.

562. Durian: **Durio zilethinus**
Mal. *Durian phazham*.

563. Gab: **Diospyros embryopteris**
B., H. *Gab*; Kan. *Holetupare*; Mal. *Panachi*; Mar. *Timburi*; O. *Kendu*; Tam. *Tumbi*; Tel. *Tinduki*.

564. Jurmata: **Canthium didymum**
Kan. *Hatteranike*; Mar. *Arsul*; Tel. *Nalla balasu*; Tam. *Imburuttan*.

565. Kesaur: **Pachyrrhizus angulatus**
B., H. *Sankalu*.

566. Kila pazham; **Vaccinium Leschenaulti**
H. *Kuraunda*; Mal., Tam, *Kila pazham*; Tel. *Wakkai*.

567. Kusum fruits: **Schleichera trijunga**
B., G., H. *Kusum-ka-phal*; Kan. *Sagadekendala*; Mal. *Puvam*; Mar. *Kusumb*; O. *Kusumo*; P. *Sama*; Tam. *Puyathipuvam*; Tel. *Poruku*.

568. Langsat: **Lansium domesticum**

569. Matasura: **Antidesma ghesaembilla**

570. B. *Khudij amb*;

571. **Mulchari: *Minusops elengi***
 B. *Bakul*; G. *Barsoli*; H. *Maulsari*; Kan. *Bakula*; Mal. *Elangi*; Tam. *Magilam*; Tel. *Vakulamu*.

572. **Neem fruit: *Melia azadirachta***
 B. *Neem phal*; H. *Nim*; Kan. *Bevu*; Mar., G. *Limba*; Mal., Tam. *Veppam pazham*; Tel. *Vepapandu*.

573. **Nisorha: *Cordia dichotoma***
 B. *Bahubara*; G. *Bargund*; H. *Lasora*; Kan. *Chikka Chalk*; Mal. *Cheruviri*; Mar. *Shelvant*; Tam. *Naravalli*; Tel. *Chinna nakkeru*; Other name: Babuvaraka.

574. **Paniyala: *Flacourtie cataphracta***
 B. *Paniyala*; G. *Tabspatra*; H. *Talispatri*; Kan. *Chankali*; Mar. *Tamhat*; Mal. *Kanji*; Tel. *Kuragayi*.

575. **Papa: *Gardenia Latifolia***
 H., Mar. *Papur*; Tel. *Peddbikki*.

576. **Perar: *Randia uliginosa***
 B. *Piralo*; G. *Gangeda*; H. *Panar*; Kan. *Kare*; Mal. *Pamikara*; Mar. *Pendari*; O. *Pendra*; Tam. *Wagutta*; Tel. *Kakisha*.

577. **Pipal: Tree fings: *Ficus religiosa***
 B. *Ashthwa*; G. *Jari*; H. *Pipal-ka-pakua*; Kan. *Arali*; Mal. *Arachu*; Mar. *Ashivatha*; Tam. *Arasam pazham*; Tel. *Ravi pandu*; Other name: Ashuvatha

578. **Piyal: *Buchanania Latifolia***
 B. *Piyal*; G., Mar. *Charoli*; H. *Chironji*; Kan. *Nurkal*; Tam. *Mowda*; Tel. *Sarapapu*.

579. **Rayan: *Mimusops hexandra***
 B. *Khukhajur*; H. *Khirni*; Kan. *Bakula*; O. *Khiri*.

580. **Sirka: *Zizyphus rugosa***
 H., Mar. *Churna*; Mal. *Malantatalai*; Tel. *Pindu parighamu*; Tam. *Kattilandai*.

581. **Star apple: *Eugenia javanica***
 B., H. *Jambrool*; Mal. *Paninis champa*; Tel. *Gulabijami chettu*.

582. **Thavittupazham: *Rhodomyrtus tomentosa***
 Mal., Tam. *Thavittu pazham*; O. *Jangli pijuli*.

583. **Tuki: *Diospyros melanoxylon***.
 Other name: Kend.

584. **Vikki Pazham: *Elaeocarpus oblongus***
 B. *Jalpai*; Mal., Tam. *Vikkipazham*; Other name: Wildolive.

585. **Boordood.**
 Other name: Winged white ants.

586. **Dhauns: *Ranatigrina***
 B. *Bheng*; H. *Mendak*; Kan. *Kappe*; Mal. *Makri*; Tam. *Thavala*; Other names: Indian bull frog; Manduka.

587. **Field rat's meat:**
 H. *Harna-chuka-ka-gosht*.

588. **Meat of narrow snouted crocodile: *Gavialis gangeticus* Gemlin**
 H. *Gharial-ka-gosht*.

589. **Red ants (with eggs): *Aecophylla smaragdina* fab.**
 H. *Hau or mata*.

590. **Wood sand piper: *Tringa galareola***
 H. *Chahee*.

591,592. **Yeast: *Terula saccharomyces***
 G., Mar. *Khamir*; Tam. *Khadi*.

INDEX OF FOODSTUFFS

The following abbreviations have been used:
 A.-Assami; B.-Bengali; G.-Gujarati; H.-Hindi;
 Kan.-Kannada; Kash.-Kashmiri; Mal.-Malayalam; Mar.-Marathi; O.-Oriya; P.-Punjabi;
 Tam.-Tamil; Tel.-Telugu

Foodstuff (1)	Sl.No. (2)
Aa'l Babu'a aa'l (Kash.)	216
Aam (paka) (B., H.)	278
Aanchar (B.)	158
Aarhoo (H.P.)	290
Aasur (Kash.)	206
Abaichi sheng (Mar.)	183
Abbrony (Kan.)	317
Abelmoschus esculentus	166
Acalypha indica	88
Accophylla Samaragdina Fab	588
Acchellu (Kan.)	201
Acha (B.)	313
Achras sapota	303
Achumooda (Kan.)	99
Aconite bean	39
Ada (B., O.)	225
Adai Meenu (Kan.)	324
Adakka (Mal.)	189
Adavi Kakara (Tel.)	519
Adavi thamma (Tel.)	183
Adavu (Mal.)	324
Adda (Tel.)	543
Adhaki	44
Adike (Kan.)	189
Adina halu (Kan.)	421
Adityabhakta	505
Adityaiu (Tel.)	82
Adonda (Tel.)	526
Adondai (Tam.)	526
Adrak (H., P.)	225
Adu (G.)	225
Advikakra (Tel.)	163
Aedi (Kan.)	335
Aegle marmelos	244
Afim (Kan.)	235
Afiam (Mal.)	235
Agase (Kan.)	47, 524
Agasi (Kan.)	205
Agasth-ka-phool (H.)	524

Foodstuff (1)	Sl.No. (2)
Agasti (H., Mar., O.)	47, 524
Agathi (Mal, Tam)	47, 524
Agathi flowers	524
Agathio (G.)	47, 524
Agati	524
Ahliv (Mar.)	506
Ahliva (Mar.)	82
Ailia coilia	315
Ain (B.)	360
Air (B.)	311
Ajamo (G.)	231
Ajmana pan (G.)	69
Ajmud (H.)	144
Ajwan (H., P.)	231
Ajwan-ka-patta (H.)	69
Akakara (Tel.)	160
Akatthe (Mal.)	524
Akhju dorua (O.)	451
Akhoot (O.)	212
Akhrod (Mar.)	212
Akhrot (B., G., H., P.)	212
Akki (Kan.)	12
Aladu (P.)	295
Alaichi (O.)	216
Alam pazham (Mal., Tam.)	246
Alasande (Kan.)	32
Ale (Mar.)	225
A'lish (Kash.)	205
Alish (P)	557
Ali vidai (Tam.)	205
Alivirai (Tam.)	82
Alkushi (B)	456
Allam (Tel.)	225
Alli (O.)	311
Allibija (Kan.)	82
Alli ilai (Tam.)	506
Allittamarai (Tam.)	523, 542
Allitamara (Tel.)	523
Allium cepa	122, 171
Allium porrum	168
Allium sativum	224
Allmania polygonoides	498
Almond	190
Alpagoda (Tam., Tel.)	295
Alsi (G., H., P.)	205
Alternanthera sessilis	101, 496

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Alti	74	Am-di-guttak (P.)	546
Alu (G.)	495	Am-ka-guthli-ka-atta (H.)	546
Alu (H., O., P.)	125,	Amla (G., H.)	239
Alubokhara (B. G. H.)	295	Amlai (P.)	310
Aluche deth (Mar.)	147	Amlaki (B.)	239
Alu-de-patte (P.)	490	Amlili (G., H.)	479, 113, 236
Alugadda akulu (Tel.)	490	Amlili goras (G.)	267
Alugaddalu (Tel.)	125	Amorphophallus campanulatus	134
Alugadde (Kan.)	125	Amphipnous cuchia	352
Alukanda (Mar.)	119	Amra (B., H.)	170, 238, 278, 546
Alupan (Mar.)	74	Amratakamu (Tel.)	238
Alu sag (B., H.)	490	Amritaphala	299
Alu yele (Kan.)	490	Amrud (H., P.)	261
Alvi (G., Kan.)	119, 506	Amrut bhabha (Pachila) (O.)	207
Amb (Hare) (P.)	170, 278	Amygdalis persica	290
Am (Kancha) (B.)	170	Anabas testudineus	351
Am (Keri) (G., H.)	170	Anacardium occidentale	192, 257
Amhaldi (H.)	121	Ananas (G., H., Kan., Mar., P.)	294
Amada (B.)	121	Ananas comosus	294
Amamutta	403	Anantmul (H.)	508
Amai Traichi (Mal., Tam.)	416	Anar (H., P.)	296
Amaranth	54, 55	Anarash (B.)	294
Amaranth seeds	452	Anasa pandu (Tel.)	294
Amaranth, spined	53	Anashina (Kan.)	237
Amaranth stem	50	Anasi pazham (Tam.)	294
Amaranth, tender	49	Anas platyrhyncha	400
Amaranthus caudatus	48	Anchoviella	396
Amaranthus gangeticus	49, 50	Anchovy	312
Amaranthus paniculatus	51, 463	Andha samp	352
Amaranthus polygonoides	52	Angur (B., H., P., O.)	258
Amaranthus spinosus	53	Anjeer (G., H., Kash. Mar.)	256
Amaranthus tristis	56	Anjura (Kan., Tel.)	256
Amaranthus viridis	57	Anla (O.)	239
Amari (H.)	481	Annona cherimolia	560
Ambadi (G., Mar.)	84	Annona reticulata	249
Amba haldi (Mar.)	121	Annona squamosa	304
Amba (pachila) (O.)	170, 278	Ansafal (H.)	272
Amba (piklela) (Mar.)	170, 278	Answari (H.)	348
Ambada	238	Antidesma diandrum	481
Ambat chuka (Mar.)	58	Antidesma ghesaembilla	568
Ambate (Kan.)	238	Antilope cervicapra Linn	417
Ambatta (Mal.)	392	Anvla (Mar.)	239
Ambattan-wal (Tam.)	333	Aphina (G.)	235
Ambo (G.)	170	Apium graveolens var dulce	62, 144
Ambu (Kancha) (O.)	170	Apple	240
Ambuja	516	Apricot fresh	241
Am choor (H.)	228	Arachis hypogaea	202, 204

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Arali (Kan.)	576	Asthisamhara	493
Arachu (Mal.)	576	Ata (B., O.)	304
Araikeerai (Tam.)	56,112	Atasi	205
Aral (Tam.)	387	Athachakkā (Mal.)	249
Aranelli (Mal., Tam.)	263	Ato (G.)	21
Araroot (O., P.)	115	Atta (B., H., O.)	21
Arasam pazham (Tam.)	576	Atti pazham (Mal., Tam.)	256
Arati doota (Tel.)	177	Attiraichi (Mal., Tam.)	406, 410
Arati dumpa (Tel.)	116	Attu eeral (Mal., Tam.)	408
Arati kayi (Tel.)	176	Attu pal (Mal., Tam.)	421
Arati pandu (Tel.)	245	Attu valai (Mal.)	325
Arati puvvu (Tel.)	175	Atukulu (Tel.)	14
Ardanda (H.)	526	Auppankeluthi (Tam.)	394
Ardraka	225	Aurat ka doodh (H.)	422
Areca catechu	189	Ava akulu (Tel.)	97
Arecanut	189	Aval (Mal., Tam.)	14
Arhar dal (B., H., Kash)	44	Avalakki (Kan.)	14
Ariavila (Mal.)	505	Avalu (Tel.)	206
Ari (H.)	12, 311	Avara (Mal.)	33, 150
Arikisira	49, 50, 452	Avarai (Tam.)	143
Arisi (Tam.)	12	Avarakka (Mal.)	143
Arishta	224	Avare (Kan.)	33
Arisithippili (Mal., Tam.)	214	Avena byzantina	459
Arius dussumieri	384	Averrhoa bilimbi	247
Arius sona	328	Averrhoa carambola	559
Arikalu	18	Avise (Tel.)	47, 524
Arkulai (Kan.)	389	Aviseginzalu (Tel.)	205
Arsul (Mar.)	563	Avocado pear	243
Arrowroot flour	115	Avocado pear nut	191
Arsaghna valukand	134	Avu palu (Tel.)	420
Artichoke	525	Ayakora	380
Artocarpus altilis	248	Ayamothakam (Mal.)	231
Artocarpus heterophyllus	158, 159, 264	Ayila (Mal.)	355
Artocarpus lakoocha	167	Azadirachta indica	483
Arvi-ka-sag (H.)	74		
Arwi (H., P.)	119	Babril (H.)	174
Arwi-ki-dandi (H.)	147	Babuvaraka	572
Arya veppila (Mal.)	484	Bacha (A.)	313
Asafoetida	215	Bachuva (O.)	313
Asalio (G.)	82	Bada angur (O.)	260
Asalia (G.)	506	Badak (Mar.)	400
Ashphal (B.)	272	Badak ande (Mar.)	401
Ash gourd	137	Badam (B., G., H., Kan., Kash., Mar., O., P.)	190
Ashvatha	576	Badamer khol (B.)	204
Ashthma (B.)	576	Badane (Kan.)	142
Ashwatha (Mar.)	576	Bael (bilati) (B.)	299
Astercantha longifolia	477	Bagani (Kan.)	460

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Bageri (H.)	404	Bangadei (Kan.)	355
Bagnaha	526	Bankarela (B.)	160
Bahal (O.)	369, 370	Banguda hedday (Kan.)	338
Bahle (Kan.)	325	Bans (H.)	468
Bahmeen (Mal.)	373	Banser dana (B.)	453
Bahupada	246	Banser phal (B.)	556
Bahubara (B.)	534, 572	Bansher-ankur (B.)	468
Bahuvaraka	534	Bans ke beej (H.)	453
Baichi	555	Bantala kadali (O.)	176
Baige (Kan.)	364	Banti (Mar.)	454
Baigan (O.)	142	Banyan tree figs	246
Baincha	555	Bar (B.)	246
Baingan (H.)	142	Baragu (Kan.)	7
Baiyang	512	Baragund (G.)	534
Bajjar bhang	548	Baragudi (O.)	33
Bajra (B., H., O.)	1	Barakoli (O.)	310
Bajri (G., Mar.)	1	Bara loniya (B.)	100
Bajru (Kash.)	1	Bara nimbu (H.)	269
Bak (B.)	47	Bara sem (H)	183
Bakala (H.)	64	Barbati (B.)	32, 43, 76
Bakla (H.)	143, 155	Barbus sarana	378
Baklamsem	64	Barbus tor	357
Bakula (Kan)	570, 578	Bargad-ka-phal (H.)	246
Bakri-da-doodh (P.)	421	Bargund (G.)	572
Bakri-ka-doodh (H.)	421	Barhar (kacha) (H.)	167
Bakri-ka-gosht (H.)	406, 410	Barigalu (Tel.)	43
Bakri-da-kaleji (P.)	408	Barkur (O.)	347
Bakri-da-mas (P.)	406	Barley	2
Bakrinu doodh (G.)	421	Barli arisi (Tam.)	2
Bakuchi	146	Barli biyyam (Tel.)	2
Bakul (B.)	570	Barokherai (B.)	485
Bale Hannu (Kan.)	116, 245	Barre mamsam (Tel.)	399
Bale kayi (Kan.)	176	Barre palu (Tel.)	419
Bale motho (Kan.)	175	Barsaunga (B., O.)	77
Baluka sag (H.)	480	Barsoli (G.)	570
Bam (B.)	314	Basala cheera (Mal.)	93, 110
Bamboo fruit	556	Basale (Kan.)	93
Bamboo seeds	453	Basella rubra	93
Bamboo, tender shoots	468	Basna	47
Bambusa arundinacea	453, 468, 556	Baspata machli	315
Bamt soonth (Kash.)	299	Bassia longifolia	277
Banalu (B.)	135	Bata (B.)	316
Banana rhizome	116	Batabi lebu (B.)	298
Banana, ripe	245	Bataka dimba (O.)	401
Banaspati (B.)	437	Batakh thul (Kash.)	401
Band gobee (H., Kash)	66	Batak nu indu (G.)	401
Bandha kopee (B., O.)	66	Batala Penari (Kan.)	544

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Batani (Kan., Tel.)	40, 42	Bevu (Kan.)	484, 571
Batapi lembu (O.)	298	Bhains ka doodh (H.)	419
Batata (G., Mar.)	490, 125	Bhains-ka-ghosht (H.)	399
Bataun (P.)	142	Bhajabuta (O.)	30
Bathak (H.)	400	Bhakra	98
Bathak-da-anda (P.)	401	Bhangan bata (B.)	320
Bathak-ka-anda (H.)	401	Bhanger, fresh	318
Bathu (Tel.)	400	Bhangon (B.)	319
Bathua leaves	59	Bhatkerela	163
Bathua sag (H., P.)	59	Bhatmas (H.)	46
Bathua saga (O.)	59	Bhav (G.)	8
Bathu guddu (Tel.)	401	Bhed-di-kaleji (P.)	409
Bathu motte (Kan.)	401	Bhejibaigana (O.)	529
Batoko plum	555	Bhela (B., H.)	554
Bauhinia malabarica	479	Bheng (B.)	585
Bauhinia purpurea	478	Bhent-ka-phool (H.)	542
Bauhinia vahlii	543	Bhesnu doodh (G.)	419
Baunsa gaja (O.)	468	Bhetki (B.)	321, 322
Beans, scarlet runner	138	Bhinda (G.)	166
Be'daana (Kash., Mar.)	260	Bhindi(H., Mar., O., P.)	166
Beef	397	Bhioni (P.)	39
Beera kayi (Tel.)	180	Bhoising (G.)	203
Beet (B.,G.,Kan.,Mal.,Mar.,Tam.,Tel.)	117	Bhole	323
Beet greens	60	Bhonvari (Mar.)	472
Beet root	117	Bhony ringni (G.)	529
Begun (B.)	142	Bhopla-chi-pan (Mar.)	102
Bel (B., H., Mar.)	244	Bhopli mirchi(Mar.)	157
Belaigori sag (H.)	505	Bhui mug (Mar.)	203
Belagokhru (G.)	98	Bhuna chana (H.)	30
Bele (Kan.)	309	Bhurukohlu (G.)	137
Bele (B.)	317	Bhutta (B.)	5, 6
Bella (Kan.)	441	Bichchoti (B.)	456
Bellulli (Kan.)	224	Bid root	509
Bellum (Tel.)	441	Biduru (Kan.)	453
Benda kayi (Tel.)	166	Big-jawed jumper	324
Bengal gram	28	Bihi (H.)	299
Bengal gram leaves	61	Bijapuram (Tel., Kan.)	269
Benincasa hispida	137	Bijram (B.)	382
Benne (Kan.)	434	Bikka (Mar.)	554
Ber (H.)	310	Bil (G.)	244
Berikai (Kan.,Tel.,Tam.,)	291	Bilva	244
Berli (Mar.)	460	Bilangra (H)	555
Beta vulgaris	60, 117	Bilati-bandhakopi (B.)	65
Betel leaves	62	Bilati batabi	260
Betel nut	189	Bilati begun (B.)	185
Betta (Kan.)	528	Bilpatre (Kan.)	244
Beto sag (B.)	59	Bilimbi	247

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Bilwa pazham (Mal., Tam.)	244	Brassica oleracea var. gemmifera	65
Bimba	164	Brassica rapa	114, 133
Bincha (B.)	555	Bread brown	26
Bindu (Kash.)	166	Bread fruit	248
Birrali (O.)	345	Bre'y (Kash.)	310
Biri (O.)	31	Brinjal	142
Bita (O.)	117	Broad bean leaves	64
Bitchuka machi (Mar.)	385	Broad beans	143
Bitter gourd	139	Brussels sprouts	65
Bitter gourd, small variety	140	Buchanania latifolia	209, 577
Biyyam (Tel.)	12	Buck wheat	455
Blackberry	557	Budagumbala (Kan.)	137
Black gram dhal	31	Budathamaga (Tel.)	373
Blue mussel	327	Budda kakara (Tel.)	95
Boal (B.)	325	Budda hasara (Tel.)	250
Boalee (H.)	325	Budhia	508
Bobbarlu (Tel.)	32, 76	Buffalo meat	399
Boerhaavia repens	96	Bugga kuruvai (Kan.)	380
Bokwa	507	Buko (O.)	524
Bombax malabaricum	540	Bulbus bubalis	399
Bombay duck	326	Bulli-koka (Tel.)	317
Bombli (Mar. Kan.)	326	Bullock's heart	249
Bomma murri (Tel.)	154	Bummi (O.)	314
Bombilimas (Mal., Tam.,)	298	Bummili (Mal.)	326
Bontha oddu (Tel.)	454	Bunsputta (O.)	315
Boodida gummadi (Tel.)	137	Burbus sp.	372
Boordood	584	Bursunga (B., O.)	77
Boorugu puvvulu (Tel.)	540	Buta (O.)	28
Boppayi kayi (Tel.)	172	Butea frondosa	517
Boppayi Pandu (Tel.)	207	Butter	434
Bor (G., Mar.)	310	Butter fruit	243
Borassus flabellifer	285	Butter Milk	424
Boroee	558		
Boroee, raw	527	Cabbage	66
Bos taurus	397	Cadalia indica	503
Botchee (Tel.)	347	Cajanus cajan	44, 45
Bottle gourd	141	Calabash-cucumber	141
Bottle gourd leaves	62	Calabash cucumber leaves	63
Bouro (O)	540	Callichorus pabo	365
Brahmi sag (O.)	506	Calonyction muricatum	472
Bramble	557	Cambu (Mal., Tam.)	1
Brassica campestris var. sarason	97	Canavalia gladiata	183
Brasica napus	106, 105	Cane sugar	439
Brassica nigra	206	Canna, edible	510
Braslica oleracea var. botrytis	68, 144	Canna, edulis	510
Brassica oleracea var. capitata	66	Cantaloup	280
Brassica oleracea var. caulorapa	87, 165	Canthium didymum	563

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Cape goose-berry	250	Chalkumra (B.)	137
Capparis horrida	526	Chaltha B., H.)	528
Capra hyrcanus	406, 408	Chama (Mal.)	16
Capsicum annum var. grossa	157, 217	Chama akulu (Tel.)	74
Carambola	559	Chama dumpa (Tel.)	119
Caranx crumenophthalmus	338	Chama kada (Tel.)	147
Caranx melampygus	342	Chamalu (Tel.)	17
Carcharias	380	Chamban (Mal.)	338
Cardamom	216	Champa (B.)	389
Cardiadichotoma	534	Champa kadali (O.)	245
Cardiospermum helicacabum	95	Champa nutiya (B.)	56
Carica papaya	172, 207	Chana (G., H.)	28
Carissa carandas	161	Chana (B.)	426
Carrot ilagal (Mal.)	67, 118	Chanana pan (G.)	62
Carrot keerai (Tam.)	67	Chanasag (H.)	62
Carrot leaves	67	Chana sag (O.)	62
Carthamus tinctorius	108, 210	Chana-ki-dal(H.)	29
Caryota urens	460	Chanda (B.)	370
Cashew fruit	257	Chandan bathua (Mar.)	59
Cashew nut	192	Chandava (Mar.)	370
Cassava	132	Chandrasur (H.)	506
Cassia tora	80	Chandravya (Kan.)	369
Cat fish	328	Chanduva (Tel.)	370
Catla catla	347	Changhi (H.)	414
Cauliflower	144	Chani (O.)	32
Cauliflower greens	68	Chankali (Kan.)	573
Celery leaves	69	Channa, cow milk	425
Celery stalks	144	Channa, buffalo milk	427
Celosia Sp	486	Chanu (Kash.)	28
Celosia argentia	497	Chanu palu (Tel.)	422
Ceylon pasali (Tam.)	70	Chapparadavare (Kan.)	143
Chachinda (H., O.)	181	Charal	476
Chaha (bara) (H.)	413	Charanga (Mal.)	141
Chahee (H.)	589	Chari	4
Chaija (P.)	311	Charoli (G., Mar.)	209, 577
Chakka (Mal.)	264	Chas (G.)	424
Chakkota (Kan.)	298	Chastang (H.)	145
Chakotra (H., G.)	260, 298	Chaudhri (Mar.)	493
Chakra mullan (Mal.)	383	Chaula (O.)	12
Chakrat	468	Chaulai sag (H.)	49
Chakravarthi keerai (Tam.)	54	Chavli (Mar.)	32
Chakunda (B., H.)	81	Chavli pan (Mar.)	76
Chakwar	81	Chawal (H.)	12
Chali (P.)	242	Chedu paddu dumpa (Tel.)	136
Chalitha (Mal.)	528	Cheera (Mal.)	49
Chala-mathi (Mal.)	378	Cheera vithu (Mal.)	452
		Cheese	428

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Chekkur manis	71	Chingri, goda	332
Chela (B.)	329, 330	Chingru (B.)	331
Chela phulo	329	Chini (B., H., P.)	439
Chelu meenu (Kan.)	385	Chinia badam-ka-khali (H.)	204
Chemballi (Mal.)	322	Chinka	3
Chembin thandu (Mal.)	147	Chinna (B., H.)	7
Chembu ilagal (Mal.)	74, 119	Chinna nakkeru (Tel.)	534, 572
Chemmeen (Mal.)	371	Chinta chiguru (Tel.)	113
Chena (sadharana) (Mal.)	135	Chintha pandu (Tel.)	236
Chena (valuthu) (Mal.)	134	Chira (B.)	14
Chenna (O.)	427	Chiraya-kandai (Tam.)	368
Chenopodium album	59	Chironji (H.)	209, 577
Cheraku rasam (Tel.)	451	Chital (B., O.)	333
Cheranga ilagal (Mal.)	63	Chintigina soppu (Kan.)	112
Cherimoyer	560	Chintaginja pottu (Tel.)	549
Cherries, red	252	Cho-cho-marrow	145
Cheruchana vithu (Mal.)	205	Chodhari (G.)	493
Cherucheera thandu (Mal.)	50	Chokha (G.)	12
Cherunaranga (Mal.)	273	Chola (B.)	28
Cherunaranga tholu (Mal.)	226	Chola bhaja (B.)	30
Cheru payer (Mal.)	34	Chola dal (Kash.)	29
Cheru payar Parippu (Mal.)	35	Cholai-ka-dandi (H.)	50
Cheruviri (Mal.)	534, 572	Cholam (Mal., Tam.)	4
Cheru (Mal.)	554	Cholam (Mal.)	5, 6
Chewra (H.)	14	Cholar dal (B.)	29
Chholianda sag (P.)	62	Cholasag (B)	62
Chichinga (B.)	181	Chole (P.)	26
Chicken	405	Choluva jella (Tel.)	366
Chick pea	28	Chondrostoma Gangeticum	316
Chikilintha koora (Tel.)	112	Chorap (G.)	32, 76
Chikka challe (Kan.)	534	Chota bandha kobi (O.)	65
Chikka chalk (Kan.)	572	Chota kanwal (P)	542
Chikkudu (Tel.)	33	Chota pijuli (O.)	302
Chikkuduginja (Tel.)	33	Choteegobee (H.)	65
Chiku (P., Mar.)	303	Chotta valai (Tam.)	336
Chilagadadumpa akulu (Tel.)	501	Chowl (B.)	12
Chilagada dumpalu (Tel.)	130	Chuaku duad (Kash.)	424
Chilgoza (H.)	193	Chuda (O.)	14
Chillies, dry	217	Chuka (H.)	58
Chilnibhaji (G.)	59	Chukandar (H., P.)	117
Chimti sag	470	Chukandar-ka-sag (H.)	60
China badam (B., O.)	203	Chuka palang (B.)	58
Chinalitapat (B.)	489	Chukka keerai (Tam.)	58
Chinch (Mar.)	236	Chukka koora (Tel.)	58
Chinchecha pala (Mar.)	113	Chuko (G.)	48
Chinch, vilaythi (Mar.)	267	Chumbia	511
Chingri (B.)	371	Chumbum (Mal.)	389

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Chumlisag (H.)	56	Cow pea	32
Chupri alu (B., H.)	120	Cowpea leaves	76
Churkia	512	Cowpea pods	148
Churna (H., Mar.)	579	Crab	334
Chuta	170	Crotalaria juncea	537
Chuvanna avara (Mal.)	174	Cucumber	149
Cicer arietinum	28, 29, 30, 61	Cucumis melo	280
Cirrhinus mrigala	359	Cucumis sativum	149
Citrullus vulgaris	184, 281, 213	Cucurbita maxima	102, 178, 179, 550
Citrullus vulgaris var. fistulosus	184	Cucurbita pepo	186
Citrus aurantifolia	273	Cumboo kelutti (Tam.)	311
Citrus aurantium	283	Cumin seeds	222
Citrus limetta	270	Cuminum cyminum	222
Citrus limon	269	Curculigo orchoides	521
Citrus maxima	298	Curcuma amada	121
Citrus medica var. acida	226	Curcuma domestica	237
Citrus paradisi	259	Gurds	423
Citrus sinensis	275	Currants, black	253
Clarias batrachus	356	Curry leaves	77
Cloves, dry	219	Custard apple	304
Clupea ilisha	341	Cyamopsis tetragonoloba	146
Cluster beans	146	Cybium commersoni	388
Coccinia cordifolia	164	Cybium guttatum	382
Coconut, dry	194	Cydonia oblonga	299
Coconut meal, deoiled	199	Cynara scolymus	525
Coconut milk	197	Cynoglossus semifasciatus	387
Coconut, tender	196	Cyphomandra batacea	308
Coconut water	198		
Cocos nucifera	194, 196, 197, 198, 199	Daa'n (Kash.)	296
Coilia Dussumieri	358	Daaniwal (Kash.)	75, 221
Coix lachryma	458	Dab. (B.)	196
Coleus barbatus	514	Daber jal (B.)	198
Colocasia	119	Da'ch (Kash.)	258
Colocasia antiquorum	72, 119, 147	Dadamari	81
Colocasia leaves	72	Dadano (G.)	88
Colocasia stem	147	Dahi (G., H., Mar., O.P.)	423
Col sag (B.)	87	Daincha seeds	457
Columba livia intermedia	411	Dalamb (G.)	296
Commelina benghalensis	475	Dalim (B.)	296
Coondapanai (Tam.)	460	Dalimb (Mar.)	296
Corchorus acutangulus	492	Dalimba (O.)	296
Corchorus capsularis	489	Dalimbari (Kan.)	296
Coriander	221	Danda mamsa (Kan.)	398
Coriander leaves	75	Danimma pandu (Tel.)	296
Coriandrum sativum	75, 221	Dantu (Kan.)	49, 50
Coturnic coturnix	407	Darbusini (Tam.)	281
Cowage seed flour	456	Dates, dried	254

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Dates, fresh	255	Dolopata (B.)	475
Daucus carota	67, 118	Donda kayi (Tel.)	164
Davan (P.)	455	Doodh (chagal) (B.)	421
Dentella repens	474	Doodh (Garu) (B.)	420
Dephal (B.)	167	Doodh (gay) (Mar.)	420
Dayi(B.)	423	Doodh (manish) (mar.)	419
Devakanchanan (B., Mar.)	478	Dood (manush) (B.)	422
Dewgram	39	Doodh (mosher) (B.)	419
Dhai (P.)	346	Doodh (Sheli) (Mar.)	421
Dhaman (P.)	293	Doodh (Stri) (Mar.)	422
Dhaincha (A)	457	Dookapendalamu (Tel.)	507
Dhane (Mar.)	221	Doron (A)	455
Dhainca (O.)	457	Dosa kayi (Tel.)	149
Dhane sag (B.)	75	Double beans	150
Dhania (O.)	75	Double roti	27
Dhania (B.,G.,H.,O.,P.)	221	Draksha (G.,Kan.,Mar.,Tam.,Tel.)	258
Dhaniyalu (Tel.)	221	Drakshai (Tam.)	300
Dhauns	585	Drakshi (Kan.)	300
Dherash (B.)	166	Drumstick	151
Dhoka	319	Drumstick flowers	152
Dhoma (H.)	337	Drumstick leaves	78
Dhundal (B.)	156	Duck	400
Dhudul (B.)	186	Dudha gunda (O.)	433
Dikemalli	527	Dudhi (H.)	485, 141
Dikmali (B.,G., H.,Mar.)	527, 558	Dul (B.)	454
Dikka malli (Tam.)	527, 558	Dulagondi (Tel.)	456
Dillania indica	528	Dumoor (B.)	256
Dilpasand (Kan.)	186	Dumbur (B.)	154
Dimiri (O.)	256	Dunglina dakkadi (G.)	171
Dim (murgi) (B.)	400	Dungudu porah (O.)	320
Dindu (Kan.)	177	Dunnahru (H.)	330
Dioscorea alata	120	Duradakandagadda	135
Dioscorea anguiera	520	Durian, pazham	561
Dioscorea glabra	512	Durian, ripe	561
Dioscorea hamiltonii	511	Duria zibethinus	561
Dioscorea pentaphylla	507	Durrah (O.)	322
Dioscorea puber	536	Echinochloa frumentacea	17
Dioscorea spinosa	518	Echinochloa stagnina	454
Dioscorea versicolor	136	Eerulli (Kan.)	123
Diospyros embryopteris	562	Eerulli soppu (Kan.)	171
Diospyros kaki	292	Eethapazham (Mal.)	255
Diospyros melanoxylon	582	Egg, duck	401
Dnunchi (H.)	458	Egg, hen	402
Dodka (Mar.)	180	Egg plant	142
Doddagoni soppu (Kan.)	100	Egg, turtle	403
Dolichos biflorus	36	Elachi (B.)	216
Dolichos lablab	33, 153	Elaeocarpus oblongus	583

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Elameen (Mal.)	360	Field rat's meat	586
Elakkai (Tel. Tam.)	216	Figs	154
Elangi (Mal.)	570	Figs	256
Elani (Tam.)	196	Finch	404
Elanthapazham (Tam.)	310	Finger millet	8
Elathari(Mal.)	216	Flacourtie cataphrecta	573
Elaychi (G.,H.,P.)	216	Flacourtie indica	555
Elettaria cardamomum	216	Folui (B.)	336
Eleusine coracana	8	Formio niger	369
Ellu (Mal., Tam.)	201	Fowl	405
Elumichai (Tam.)	273	Foxtail millet	3
Elumicham thol (Tam.)	226	Fraa'sh bean (Kash.)	155
Emblica officinalis	239	Fragaria vesca	305
Ena	417	Fras bean (P.)	155
Engallu (Kan.)	312	French bean (dry)	43
Engraulis mystax	312	French beans	155
Ennai (Tam.)	438	French millet	7
Enne (B.,H.,Mar.,Kan.,Mal.)	438	Fringillidoe	404
Epedong sanga	513	Fudina (G.)	94
Erimapasal (Mal.)	160		
Erra bachchali (Tel.)	93	Gaav duad (Kash.)	420
Erra jilugu (Tel.)	457	Gaazur (Kash.)	118
Erumai iraichi (Tam.)	399	Gab (B.,H.)	562
Erumai pal (Mal., Tam.)	419	Gadro (G.)	16
Eugenia javanica	580	Gadhe-ka-doodh (H.)	418
Eugenia malaccensis	265	Gadh gobee-da-sag (P.)	87
Euphorbia hirta	485	Gadida Palu (Tel.)	418
Ervale ferox	462	Gahama (O.)	20
Eutropichthys vacha	313	Gahu (Mar.)	20
		Gai dudha (O.)	420
		Gai-ka-doodh(H.)	420
Faba vulgaris	150	Gai-ka-gosht (H.)	398
Fefda papdi (G.)	143	Gaja nimbe (Kan.)	270
Fagopyrum esculentum	455	Gaja nimma pandu (Tel.)	270
Falsa (B.,G.,H.)	293	Gajar (B.,G.,H.,Mar.P)	118
Fansi (G.)	155	Gajara (O.)	118
Fenugreek leaves	79	Gajara patra (O.)	67
Fenugreek seeds	223	Gajar-di-sag (P.)	67
Ferula foetida	215	Gajar pan (G., Mar.)	67
Fetid cassia, dry	80	Gajar sag (B., H.)	67
Ficus bengalensis	246	Gajjara akulu (Tel.)	67
Ficus carica	256	Gajjara gadda (Tel.)	118
Ficus cunia	154	Gajjare (Kan.)	118
Ficus religiosa	576	Gajri soppu (Kan.)	67
Field bean	33	Galalu (B)	125
Field beans, tender	153	Galijeru (Tel.)	494
Field pumpkin	186	Galartori(P)	181

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Gallus bankiva murghi	404	Ghetanu gos (G.)	410
Gamini revanchini (G.)	535	Ghia (P.)	141
Ganda (P.)	123	Ghia da sag	63
Gandah (Kash.)	123	Ghia tori	156
Gandhela (H.)	77	Ghol (Mar.)	337
Gangakulia lembu(O.)	273	Ghol (B.)	424
Gangeda (G.)	575	Ghol	337
Ganika (Kan.)	92	Gholi (Mar.)	100
Ganjei (O.)	531	Ghola dahi (O.)	424
Ganne-da-ras (P.)	451	Ghole gluru(G.)	164
Ganne-ka-ras (H.)	451	Ghongha (H.)	415
Ganth gobi (P.)	165	Ghosala (Mar.)	156
Ganth gobi-ka-sag (H.)	87	Ghurush (P.)	465
Ganthain (P.)	86	Ghusuri mansa (O.)	412
Ganuhaar (Kash.)	16	Giant chillies (Capsicum)	157
Garayo (G.)	472	Gid Pakka (Kan.)	370
Garagara (Kan.)	154	Giddikaoli (H.)	378
Garbanzo	28	Gilas (H., Kash.,P.)	252
Garcinia mangostana	279	Gingelly seeds	201
Garden cress	82	Ginger, fresh	225
Garden cress seeds	200	Ginnu (Kan.)	427
Garden sorrel, sepals	83	Giria sag (H.)	471
Gardenia gummifera	527, 558	Glassogobius giuris	317
Gardenia latifolia	574	Glycine max	500
Garikalai (B.)	46	Glycine max Merr.	46
Garlic	224	Goat meat	406
Garmar	514	Goda chingri (B.)	332
Gasagasalu (Tel.)	235	Godhi (Kan.)	20, 112
Gau-da-doodh (P.)	420	Godhi hittu (Kan.)	21
Gav (B.)	292	Godhumalu (Tel.)	20
Gavialis gangeticus Gmelin	587	Godumai (Tam.)	20
Gaynu doodh (G.)	420	Godumai mavu (Tam.)	21
Gehun (H.)	20	Godumai mulai (Tam.)	23
Genasina yele (Kan.)	501	Goduma pindi (Tel.)	21
Genasu (Kan.)	130	Goggler	338
Gendari sag	53	Gogta sag	49
Gendhri sag (H.)	48, 53	Gogu	84
Gendum (Mal.)	20	Gokhru (B.,H.)	98
Geru beeja (Kan.)	192	Gokshura	98
Geru hannu (Kan.)	257	Gol (G.)	441
Ghandhini	535	Gola (P.)	195
Gharial-ka-gosht (H.)	587	Gola-da-doodh (P.)	197
Ghau	20	Gola da pani (P.)	198
Ghavum (G.)	20	Golkakra (B.,H.)	579, 163
Ghagasbater (H.)	407	Golkandra (H.)	160
Ghee, cow	435, 436	Golmarich (B.,O.)	233
Gherkochoo (B.)	135	Golu phuti kakuri (O.)	186

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Gom (B.)	20	Guara-di-phalli (P.)	146
Go-mamsam (Mal., Tel.)	398	Guar-ki-phalli (H.)	146
Go-mangso (B.)	398	Guchhai	373
Go-mans (Mar.)	398	Gud (B.,H.,P.)	441
Go-mansa (O.)	398	Guda (O.)	441
Go-mas (G.)	398	Guddehannu (Kan.)	250
Gometta (Mar.)	508	Gugli (P.)	456
Gominta (Tel.)	505	Guizotia abyssinica	207
Gondola	16	Gul (Mar.)	441
Gongura (Tel.)	84	Gulab jaman (H.)	302
Gonialosa manminna	349	Gulab jambu (G.)	302
Gooloowah	317	Gulabi jami chettu (Tel.)	580
Goora (B.)	13	Gulathi (O.)	317
Goora doodh (B.)	433	Gundu thunga gaddi (Tel.)	509
Gooseberry	71	Gulcharni	472
Gootellah (H.)	320	Gullar	256
Gor (Kash.)	441	Gummadi akulu (Tel.)	102
Goradu (Mal.)	135	Gummadi ginjalu (Tel.)	550
Gori kayi (Kan.)	146	Gummadi kayi (Tel.)	178
Gorissa (A.,O.)	353	Gundaro (G.)	509
Gorre karjamu (Tel.)	409	Gurbeli (O.)	495
Goruchikkudu (Tel.)	146	Gurellu (Kan.)	207
Goshbub	291	Gurugu (Tel.)	497
Goshbub tang (Kash.)	243	Gurgur (B.)	458
Gos-koora (Tel.)	66	Gurjowli (B.)	373
Gothambu mavu (Mal.)	21	Gurkhi	92
Goudli	16	Gurus (Kash.)	432
Gourikalai sag (B.)	500	Guthi beera (Tel.)	156
Goucha (H.)	456	Guthipu (Tam.)	324
Govar (G.)	146		
Gavari(Mar.)	146	Haa'kh (Kash.)	65
Govindi (Mar.)	526	Habenaria commelinifolia	515
Grape, blue	257	Hadjora (H.)	493
Grape, pale green	258	Hagal kai (Kan.)	140
Grape fruit	259	Halad (Mar.)	237
Green gram dhal	35	Haladi (O.)	237
Green gram, whole	34	Halasu (Kan.)	264
Grewia asiatica	293	Halasu (yele) (Kan.)	158
Grey quail	407	Haldhar (G.)	237
Groundnut	202	Haldi (H.,P.)	237
Groundnut cake	204	Halim (B.,H.,P.)	81
Gua (O.)	189	Halva (Mar.)	369
Guagu'j (Kash.)	133	Halwa tendu (H.)	292
Guava, country	261	Handi mamsa (Kan.)	412
Guava, hill	262	Hangoor (B.)	380
Guan-ka-sag	74	Hansh (B.)	400
Guanra chhuin (O.)	146	Hansher dim (B.)	401

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Hanuman phal (H.)	560	Horse purslane	494
Har (B.)	493	Horse radish	151
Harada (O.)	44	Horse radish leaves	78
Hara dhania (H.)	75	Hukosina yele (Kan.)	68
Haraka	18	Hukosu (Kan.)	144
Haran-ka-gosht (H.)	417	Hunise chiguru(Kan.)	113
Harbara (Mar.)	28	Hunise hannu (Kan.)	236
Harbara dal (Mar.)	29	Hurhuria (B.)	505
Harbara pan (Mar.)	62	Huri-kadale (Kan.)	30
harithamanjari	88	Huruli kayi (Kan.)	155
Hari phal (B.)	263	Hyacinth bean	33
Harfarowrie (H.)	263	Hydrogenated oil	437
Haridra	237	Hydrolea	504
Harik (Mar.)	18		
Harna-chuha-ka-gosht (H.)	586	Idichakka (Mal.)	158
Harpadon nehereus	326	Ikad (G)	458
Hasagunigida (Kan.)	456	Ikkhu raush (B.)	451
Hasuvina halu (Kan.)	420	Ilanir (Tam.)	198
Hathichak (H.)	525	Illavam puvu(Tam.)	540
Hathikhojia alu (O.)	134	Iluppai (Tam.)	277
Hatna-sirmi (H.)	541	Imburuttan (Tam.)	563
Hatteranike (Kan.)	563	Imli (H.,P.)	236
Hau	588	Imli-ka-biya-ka-gudda (H.)	549
Heeraikai (Kan.)	180	Imli patte (H.,P.)	113
Heggenasu (Kan.)	136	Indian bull frog	585
Helianthus annuus	211	Indian gooseberry	239
He'nd (Kash.)	281	Indian hog plum	238
Henda (Kan.)	449	Indian plum	310
Herring, Indian	339	Indian red spinach	93
Herring, ox-eyed	340	Indian whiting	343
Hesare bele (Kan.)	35	Inguva (Tel.)	215
Hesare kalu (Kan.)	34	Inji (Mal. Tam.)	225
Hibiscus cannabinus	84	Ipomoea batatas	501, 130
Hijli badam (B.)	192, 257	Ipomoea leaves	86
Hilsa (B.,H.)	341	Ipomoea reptans	85, 86
Hing (B.,G.,H.,Mar.,P.)	215	Ipomoea stems	85
Hingoli	142	Ippa (Tel.)	277
Hingu (Kan.,O.)	215	Iskadasari (Tel.)	480
Hipnerle (Kan.)	282	Istaberi (Kash.)	305
Hippe (Kan.)	277	Italian millet	3
Holetupare (Kan.)	562		
Holuo (B.)	237	Jaaweni (Kash.)	231
Honagone soppu (Kan.)	101	Jaba dhana (O.)	2
Honey	440	Jack fruit	264
Hordeum vulgare	2	Jack fruit seeds	159
Horse gram	36	Jack, tender	158
Horse mackerel	342	Judi-jella (Tel.)	384

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Jaggery, cane	441	Jayitri (B.,O.)	227
Jaggery, coconut palm	442	Jaypatri (G., Mar.)	227
Jaggery, date palm	443	Jeedi pandu (Tel.)	257
Jaggery, fan palm	444	Jeedi pappu(Tel.)	192
Jaggery, sago palm	445	Jeelakarra (Tel.)	222
Jagol dim (B.)	403	Jeerage (Kan.)	222
Jagol mangse (B.)	416	Jeerakam (Mal., Tam.)	222
Jahrphali (H.)	154	Jellalu (Tel.)	328
Jai (B.)	459	Jellum (O.)	366
Jaiphal (B.,G.,H.,Mar.,O.)	229	Jeripothu (Tel.)	387
Jaji kayi (Kan., Tel.)	229	Jewar (P.)	462
jalguza (Kash.)	208	Jew fish (kora)	344
Jalpai (B.)	583	Jew fish (Pallikora)	345
Jalwatur (Kash.)	227	Jhalli (P.)	313
Jambakka (Mal.)	302	Jhar sim (B.)	146
Jamberry	307	Jhinga (B.)	180
Jambhool (Mar.)	266, 302	Jilugu chettu (Tel.)	460
Jambrool (B.,H.)	580	Jipoo sanga	515
Jambu (G.)	266	Jira (B.,H.,Mar.,O.,P.)	222
Jambu nereedu (Tel.)	302	Jiru (G.)	222
Jambu fruit	266	Jiruka	222
Jami pandu (Tel.)	261	Joan (B.)	231
Jam phal (G.)	261	Job (B.)	2
Jamrul (B.)	302	Job's tears	458
Jam safed	265	Jola (Kan.)	4
Jamukoli (O.)	266	Jonnalu (Tel.)	4
Jamun (H.,P.)	266	Jowar	4
Janani-da-doodh (P.)	422	Juani (O.)	231
Janchi (O.)	180	Juani patra (O.)	69
Jangli pijuli (O.)	581	Juar (B.,G.,H.)	4
Janha (O.)	4	Juglans regia	212
Janumu puvvu (Tel.)	537	Jujube	310
Janupulisam (Tel.)	569	Junglibadam	544
Japan plum	270	Junnu (Tel.)	427
Japanese plum	297	Jurani	231
Jari (G.)	576	Jurmata	563
Japathri (Tel.)	227	Jwari (Mar.)	4
Jargadi	458	Kaa'shir al (Kash.)	186
Jathikkai (Mal., Tam.)	229	Kabbina halu (Kan.)	451
Jathipatri (Mal., Tam.)	227	Kablibakla (P.)	64
Jau (G.,H.,Mar.)	2	Kabutar (H.,Mar.,P.)	411
jav (G.,H.,Mar.)	459	Kachalu	119
Jave godhi (Kan.)	2	Kachil kizhangu (Mal.)	120
Javithri (H.)	227	Kachu	74
Jawas (Mar.)	205	kachua-ka-gosht (H.)	416
Jayanti(S)	257	Kadachakka (Mal.)	248

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Kadaintha pal (Tam.)	432	Kaki	292
Kadala (Mal.)	28	Kaki bontha (Tel.)	346
Kadalai ilaigal (Tam.)	62	Kakisha (Tel.)	575
Kadala ilagal (Mal.)	62	Kakkameen (Tam.)	346
Kadalai parippu (Tam.)	29	Kakkarikkai (Tam.)	149
Kadalai punnakku (Mal., Tam.)	204	Kakrol	163
Kadala parippu (Mal.)	29	Kakudi (O.)	149
Kadal chandi (Mal.)	539	Kakunda (O.)	348
Kadal pasi (Tam.)	539	Kala (B.)	245
Kadale (Kan.)	28	Kalabasu	346
Kadale bele (Kan.)	29	Kala-beinse (O.)	346
Kadale kayi (Kan.)	203	Kalakose (Tam.)	65
Kadale soppu (Kan.)	62	Kalakkay (Tam.)	162
Kadali	116, 245	Kalalu (A.)	120
Kadali bhanda (O.)	175	Kalamatar	150
Kadali manja (O.)	177	Kalan (Tam.)	532
Kaddu	141, 178	Kalara (O.)	140
Kaddu-ka-sag	102	Kala til (H.)	207
Kadgi limbu (G.)	273	Kalathi (G.)	36
Kadhi limb (Mar.)	77	Kaleej (Mar.)	409
Kadu (H.)	64	Kaleji (bher)	409
Kadu debhai hullu (Kan.)	454	Kaleju (G.)	409
Kadugu (Mal., Tam.)	206	Kalimirch (H., P.)	233
Kadugu ila (Mal.)	97	Kalimushi (H.)	521
Kadugu ilai (Tam.)	97	Kalingad (Mar.)	281
Kaduhuralikayi	150	Kali tori (P)	180
Kadu limb (Mar.)	484	kalkipan (Mar.)	468
Kadupadavla (Kan.)	487	Kallangadi (Kan.)	281
Kadumal	33	Kallan-cooree (Mal.)	394
Kagaji lembu (O.)	269	Kallu (Mal., Tam., Tel.)	449
Kaghi (Kan.)	346	Kalmi sag (B.)	86
Kahree meen (Mal.)	385	Kalojam (B.)	266
Kaicho (O.)	456	Kalokera (B.)	526
Kaippakka (Mal.)	140	Kalum (Kash.)	64
Kaith (H.)	309	Kalvus (B.)	346
Kaitha (O.)	309	Kamak (P.)	20
Kajoli (B.)	315	Kamal (G., Mar.)	516, 523
Kajra (O.)	357	Kamala (O.)	284
Kaju (G., H., Kash., Mar., P.)	192	Kamala lebu (B.)	284
Kaju phal (G., H., Mar., P.)	257	Kamala pandu (Tel.)	284
Kakadi (Mar.)	149	Kamaleku (Kan.)	247
Kakamachi (B.)	92	Kamal gatta (H.)	169
Kakan kora	3	Kamal-ki-jadh (H.)	516
Kakara kayi (Tel.)	140	Kamanchi (Tel.)	92
Kakdi (G.)	148	Kamavazhar (Tam.)	475
Kaker (Mar.)	555	kamla dambu (Kan.)	516
Kakharu (O.)	178	Kamma regu (Tel.)	167

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Kamphuti (Mar.)	50	Kara (Kash.)	42
Kamrakh (H.)	559	Karachlo (G.)	335
Kamranga (B.)	247	Karadi (Mar.)	210
Kangni (H., P.)	3	Karakatha (Mal.)	347
Kanangi (G.)	340	Karakla (O.)	508
Kanan-keluthi (Tam.)	355	Karale (Mar.)	207
Kanakindoli (Kan.)	272	Karamanga (O.)	247
Kanchanam (Tel.)	478	Karamarda (G.)	162
Kanchari (B.)	101	Karamani (Tam.)	32
Kanchu kuri (Mar.)	456	Karambia	526
Kanda (Mar.)	123	Karamcha (B.)	162
Kandamula (O.)	130	Karambel (G., Mar.)	528
Kandamula danka (O.)	85	Karananda (Mar.)	162
Kandamula saga (O.)	86	Karapata (G.)	163
Kandankathiri (Mal., Tam.)	529	Karatta (Mal.)	311
Kandanthippili (Mal., Tam.)	234	Karaunda (H.)	565
Kandi pappu (Tel.)	44	Karava (Kan.)	353
Kando (G.)	123	Kardi (H.)	210
Kandregu (Tel.)	555	Kardi Pan (Mar.)	108
Kane (Kan.)	343	Kare (Kan.)	575
Kaneek (Mar.)	21	Kare kayi (Kan.)	162
kangni (H., P.)	3	Karela (B., G., H., Kash)	139, 140
Kangni (B.)	16	Karibevu (Kan.)	77
kanji (Mal.)	573	Kariecheerai (Tam.)	100
Kankada (O.)	335	Karikku (Mal.)	196
Kankoda	160	Karimenasu (Kan.)	233
Kankra (B.)	335	Karimpalam (Mal.)	188
Kannan (Mal.)	386	Karivepaku (Tel.)	77
Kanangi (G.)	501	Kariveppilai (Mal., Tam.)	77
Kannan mathi (Mal.)	339	Karle (Mar.)	140
Kanoshi (Mar.)	346	Karlikai (Kan.)	160
Kanphuti (H.)	95	Karmai (B.)	479
Kanta alu (H.)	507	Karmani (Tam.)	76
Kantalo dadho (G.)	53	Karolis (G.)	95
Kana neutia saga (O.)	53	Karonda, fresh	161, 162
Kandadumpa (Tel.)	134	Karnasphota	95
Kantakari (B.)	529	Karpura haridra	121
Kanta-notya (B.)	53	Karrapendalamu (Tel.)	132
Kante-math (Mar.)	53	Kartoli (Mar.)	160
Kantewalichaulai (H.)	53	Karthamin (Mal.)	346
Kanthal (B.)	264	Karumbin neeru (Mal.)	451
Kanthan kathiri (Mal., Tam.)	529	Karunai kizhangu (Tam.)	135
Kanval (H.)	523	Karuppan charu (Tam.)	451
Kapat phodi (Mar.)	95	Karuppu avoli (Mal.)	369
Kapith	309	Karuppu-vowal (Tam.)	369
Kappa	132	Karvilla (P.)	526
Kappe (Kan.)	585	Kashi bhopla (Mar.)	186

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Kasara (Mar.)	509	Kelicha khunt (Mar.)	177
Kasini keerai (Tam.)	473	Kella (P.)	245
Kasu andi (Mal.)	192	Kellakkan (Tam.)	343
Kasalu (H.)	520, 536	Kel phool (G., Mar.)	175
Kasu manga (Mal.)	257	Keluthi (Tam.)	328
Katar maaz (Kash.)	411	Kempu huruli (Kan.)	174
Katcha pepita (P.)	172	Kena sag (H.)	475
Katchua ka anda (H.)	403	Kend	475
Kateli (H.)	529	Kend	582
Kathakanda (O.)	132	Kendu (O.)	562
Kathal (H.P.)	264	Kendai-meen (Tam.)	379
Katha sag (H.)	474	Kenkra (H.)	335
Kathbel(B.)	309	Keri (G.)	278
Kathi peraga (Tel.)	360	Kesaur	564
Kathiri kai (Tam.)	142	Kesu dantu (Kan.)	147
Katukashataki	180	Kezhvaragu (Tam.)	8
Kath sim (B.)	183	Khada (O.)	50
Kathu kizhangu (Tam.)	507	Khadchi (Mar.)	357
Kathutali (Tam.)	472	Khaira (B.)	378
Kathu thambattan (Tam.)	183	Khairwal (H.)	478
Katla (B.,H.)	158, 347	Khajur (G.,H.,Mar.,P.)	255
Kattelu (Tam.)	207	Khajura (Mar.)	322
Kattilandai (Tam.)	579	Khajuri (O.)	255
Kattuchena (Mal.)	136	Khakra (G.)	517
Kattupeechal (Mal.)	156	Khamba alu (O.)	135
Kaucha (Mar.)	456	Khamealu	120
Kaunch (H.)	456	Khane hari	101
Kaula-gedar (Mar.)	355	Khapra sag (H.)	494
Kavallu (Tel.)	378	Kharbooja (G.,H.,Mar.,P.,Tel.)	280
Kavath (Mar.)	309	Kharjoora (Kan.)	255
Kavu (Tel.)	91	Kharjoora pandu (Tel.)	255
Kawanch (P.)	456	Kharbuz (Kash.)	280
Kawla phanas (G.)	158	Kharmuj (B.)	280
Kayitha chakka (Mal.)	294	Khasakhasa (Tam.)	235
Kazhutha pal (Mal.,Tam.)	418	Khasi-ka-jigar (H.)	408
Keerai thandu (Tam.)	50	Khaskhas (Mar.)	235
Keerai vidai (Tam.)	452	Khatti palak	58
Keikeera (Tel.)	48	Kha'zur (Kash.)	255
Kela (Kanch) (B.)	176	Kheer (B.,H.,P.)	428
Kela (G.)	176	Khejur (B.)	255
Kela (G.,H.,Kash.)	116, 245	Khekra (Mar.)	335
Kela (hara) (H.,P.)	176	Kheksa (H.)	163
Kelanu thed (G.)	177	Kheri (B.)	39
Kele (Mar.)	176, 245	Khesari dhal (B.,H.,O.)	37
Kele-da-phool (P.)	175	Khesari leaves	476
Kela-ka-phool (H.)	175	Khesari paruppu (Tam.)	37
Kele-ka-tana (H.)	177	Khesari sag (B.,H.,O.)	476

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Khira (H.,P.)	149	Kohlu (G.)	178
Khiri (O.)	578	Koi (B.,O.)	351
Khirni (H.)	578	Koila karha sag	477
Khoa (Whole buffalomilk)	429, 430	Kokar thul (Kash.)	402
Khoiriga (O.)	360	Kokilasha	477
Khoomani (H.)	242	Koliji (Kan.)	322
Khorat (Mar.)	168	Koli motte (Kan.)	402
Khorsula (B.)	348	Kolinchi pazham (Tam.)	270
Khoyra, fresh (B.)	349, 350	Kollu (Tam.)	36
Khumb (P.)	532	Kolmi danta (B.)	85
Khubani	242	Kombdi (Mar.)	405
Khudijamb (B.)	569	Kombdi ande (Mar.)	402
Khukhajur (B.)	578	Kombuppodalai (Tam.)	487
Khulkul (Kan.)	382	Kommupotla (Tel.)	487, 173
Khursa	100	Konar sag	478
Khursha	346	Konchu (Mal.)	354
Kichili pazham (Tam.)	284	Konda (Mar.)	13
Kilannu (Mal.)	458	Konduri (H.)	164
Kila pazham (Mal., Tam.)	565	Konema (Tel.)	389
Kireeda poochad pazham (Mal.)	289	Koocha machli	352
Kishmish (B.,G.,H.,Kash.,O.,P.,Tel.)	300	Koon (Mal.)	532
Kisari (P.)	476	Kooshmanda	137
Kithilai(Kan.)	275	Kootu (H., Mal., Mar., Tam.)	455
Kittul flour	460	Koovu podi (Mal.)	115
Kiwach (H.)	456	Kora (Mal.)	344
Kiwanch (G.)	456	Korakan	8
Knol-khol	165	Korava (Tam.)	353
knol khol greens	87	Korla (Mar.)	479
Kobbare halu (Kan.)	197	Korla leaves (Mar.)	479
Kobbari (Tel.)	195	Korralu (Tel.)	3
Kobbari neeru (Tel.)	198	Korrameenu (Tel.)	386
Kobbari Palu (Tel.)	197	Korukkapalli (Mal., Tam.)	267
Kobbari pindi (Tel.)	199	Kosu (Kan.)	66
Kobi (G., Mar.,)	66	Kothamalli (Mal., Tam.)	75
Kochu (B.)	119	Kothamallividai (Tam.)	75, 221
Kochu danta (B.)	147	Kothambalari(Mal.)	75, 221
Kochu sag (B.)	74	Kothambari (Kan.)	221
Koda milagai (Tam.)	157	Kothambari soppu (Kan.)	75
Kodi (Tel.)	405	Kothavara (Mal., Tam.)	146
Kodi guddu (Tel.)	402	Kotnidadoodh (P.)	418
Kodikizhangu (Tam.)	136	Kothimbir (Mar.)	75
Kodinellikkai (Mal.)	250	Kothimiri (Tel.)	75
Kodoadhan (B.)	18	Kothmer (G.)	75
Kodus	18	Kothu (G.)	309
Kodra (G.,H.)	18	Kothu-kadalai (Tam.)	28
Kohala (Mar.)	137	Kotoha (A.)	453
Kohl-rabi (H.)	165	Kovai(Mal., Tam.)	164

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Kovai-loola-keluthi (Tam.)	366	Kuroogoo-paral (Tel.)	342
Kovariya (G.)	81	Kurdu (Mar.)	497
Kovippu (Tam.)	144	Kurumulaku (Mal.)	233
Koya keerai (Tam.)	55	Kuseruka	509
Koyya pazham (Tam.)	261	Kusubalakki (Kan.)	10
Kozhi (Mal., Tam.)	405	Kusum (B.)	210
Kozhimutta (Mal. Tam.)	402	Kusuma akulu (Tel.)	108
Krambu (Tam.)	220	Kusumbo (G.)	210
Kre'hnu maaz (Kash.)	409	Kusuma ginzalu (Tel.)	210
Krishna kamal (G.)	289	Kusumbha	108
Kua (O.)	430	Kusumbha ilagal (Mal.)	108
Kuakur (Kash.)	405	Kusambe (Kan.)	210
Kubayakum (Tel.)	188	Kusumbh seeds	210
Kucha (B.)	352	Kusumbna pan (G.)	108
Kudappan mavu (Mal.)	460	Kusume yele (Kan.)	108
Kudari (B.)	508	Kusum fruits	566
Kudiraivalu (Tam.)	17	Kusumb (Mar.)	566
Kuhili (Mar.)	456	Kusumo (O.)	566
Kuil (Tam.)	357	Kusum-ka-phal (H.)	566
Kukdi-da-anda (P.)	402	Kusum sag (B.,H.)	108
Kukka godugu (Tel.)	532	Kuva mavu (Tam.)	115
Kukkuda dimba (O.)	402	Kulki (H.)	16
Kukuralu (B.)	520, 536		
Kukurjibli (B.)	387	Laa'r (Kash.)	149, 295
Kularal (Tam.)	314	Labang (B.,O.)	220
Kuleeth (G., Mar.)	36	Labeobata	320
Kulfa (H.,P.)	100	Labeocalbasu	346
Kuliakhara (B.)	477	Labeo rohita	377
Kulthi-kalai (B.)	36	Labi (Mar.)	338
Kulu	507	Labmista (B.)	547
Kulunashpati (B.)	243	Lactarius lactarius	324
Kumbala (Kan.)	178	Lactuca sativa	89
Kumbalanga (Mal.)	137	Lader (Kash.)	237
Kumbale soppu (Kan.)	102	Ladies fingers	166
Kumdar dana (B.)	550	Lagenaria vulgaris	63, 141
Kumhra sag (B.,H.)	102	Lahango (mar.)	98
Kumra (B.)	178	Lakh dal (G., Mar.)	37
Kunduru (O.)	164	Lakh (Mar.)	476
Kuntapadamu (O.)	462	Lakkodi	476
Kuntiah (O.)	394	Lakooch, raw	167
Ku'nu'kh (Kash.)	20	Lakot pazham (Mal., Tam.,)	276
Kuppa keerai (Tam.)	57	Lalambari (Mar.H.)	547
Kuppameni (Mal., Tam.,)	88	Lal bhopla (Mal.)	178
Kuppichettu (Tel.)	88	Lalkamal (Mar.)	523
Kuppigida (Kan.)	88	Lal sim (B.)	174
Kuppi khokli (H., Mar.)	88	Lama-ke-biya-ka-gudda	543
Kuragavi (Tel.)	573	Lang (G.)	476

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Langsat	567	Limonia acidissima	309
Lanka (B.,O.)	218	Linseed seeds	205
Lanka amba (O.)	257	Lindo Limba (G.)	484
Lanka ambu manji (O.)	192	Linum usitatissimum	205
Lanka (bilathi (B.)	157	Liver, goat	408
Lankapappu (Tel.)	37	Liver, sheep	409
Lansium domesticum	567	Lobia (H.)	32, 76
Lapadi (G.)	497	Lobster	354
Lasan (G.,P.)	224	Lokat (H.,Kash.,Tel.)	276
Lashun	224	Long (P.)	220
Lasoon (Mar.)	224	Loni (Mar.)	434
Lasora (H.)	572	Loquat	276
Lassi (H.,P.)	424	Losora (H.)	534
Lasson (vilayati) (H.)	168	Lotus root	516
Lata (B.)	353	Lotus seeds, dry	461
Lates calcarifer	321	Lotus stem	169
Lathyrus sativus	476	Lotus tetrogonolobus	541
Lau (B.,O.)	141	Love apple	185
Lauki-ka-sag (H.)	63	Love-lies bleeding	48
Lau sag (B.)	63	Lovet sabuni (B.)	494
Lavang (G.,H.,Mar.)	220	Lowki (H.)	141
Lavanga (Kan.)	220	Luffa acutangula	180
Lavangalu (Tel.)	220	Luffa cylindrica	156
Lebu (B.)	273	Lukat (Mar.)	276
Lebur khosa (B.)	226	Lycopersicon esculentum	185, 306
Ledi mamsamu (Tel.)	417	Lycoperdon	533
Leeks	168		
Lehsan (H.)	224	Maa dudha (O.)	422
Leiognathus insidiator	383	Maanch (Kash.)	440
Lembri chopra (O.)	226	Maa'shi duad (Kash)	419
Lemon	269	Maaz (Kash.)	410
Lemon, sweet	270	Mace	227
Lens esculenta	38	Mackerel	355
Lentil	38	Macrobrachium rufus	332
Lepidium sativum	82, 200	Mada	460
Letha Kobbari (Tel.)	196	Madapuginja	531
Lettuce	89	Madar (B.H.)	248
Lichi	271	Madarang (O.)	101
Lichi, bastard	272	Madavai (Tam.)	360
Limbsal (Mar.)	226	Madh (Mar.)	440
Limba (G.)	571	Madhu paka	280, 440
Limbu (Mar.)	269	Madhura kizhangu ilagal(Mal.)	501
Limbunichal (G.)	226	Madhura naranga (Mal.)	284
Lime	273	Madrar (Kash.)	439
Lime peel	226	Madua (B.,H.)	8
Lime ,sweet, Malta	274	Mag (G.)	34
Lime, sweet, Musammi	275	Magilam (Tam.)	570

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Magur (B.)	356	Manasa, chheli(O.)	410
Magurah (O.)	356	Manathakkali (Mal., Tam.)	92
Maha (Kash.)	31	Manchi pulleri (Tel.)	481
Maharda (O.)	183	Mo'nd (Kash.)	165
Mahasole (B.)	357	Mandai valai (Tam.)	384
Mah-di-dal (P.)	31	Mandari (Tam.)	478
Mahin-da-doodh (P.)	419	Mandeli	358
Mahua (B., G., H., Mar.)	277	Manduka	585
Mahula (O.)	277	Mandia (O.)	8
Mah-wu-laachi (Tam.)	389	Manga (Mal., Tam.)	170
Maida (B., H., Kan., Mar., O.)	22	Manga andi parippu (Mal.)	546
Maida Mavu (Mal., Tam.)	22	Manga inji (Mal.)	121
Maida pindi (Tel.)	22	Mangali kathi (Tel.)	336
Mainji (Tam.)	121	Mangifera indica	170, 228, 278, 546
Mainsi dudha (O.)	419	Mango fish	391
Maize, dry	5	Mango ginger	121
Maize, tender	6	Mango, green	170
Majjiga (Tel.)	424	Mango powder	228
Majjige (Kan.)	424	Mango, ripe	278
Maka (H., Mar., O.)	5, 6	Mango seed kernel	546
Makaa'y (Kash.)	5, 6	Mango steen	279
Makai (G.)	5, 6	Mangri (H.)	356
Makhan (B., H., P.)	434	Mangusthan (B., H., Kan., Mar., Mal., Tam.)	279
Makhana (B., G., H.)	462	Manihot esculenta	131
Makhan sim	143, 183	Manila imli	267
Makhantana doodh (B.,)	432	Man iraichi (Mal., Tam.)	417
Makka cholam (Tam.)	5, 6	Manjal (Mal., Tam.)	237
Makoy (H.)	92	Mans (dukar) (Mar.)	412
Mala (Kan.)	360	Mans, sheli (Mar.)	410
Malan (Mal.)	368	Manthal (Mal.)	387
Malantutali (Mal.)	579	Manuka (Mar.)	300
Malaya apple	265	Mapu jella (Tel.)	385
Malia azadirachta	571	Mara (Kan.)	246
Malus sylvestris	240	Marcha (G.)	217, 218
Malva parviflora	499	Marachini (Mal.)	132
Mambulichi (Tam.)	238	Mara genasu (Kan.)	132
Mamidi allam (Tel.)	121	Mara kosu (Kan.)	65
Mamidi jeedi (Tel.)	546	Maranta arundinacea	115
Mamidi kayi (Tel.)	170	Marasebu (Kan.)	290
Mamidi pandu (Tel.)	278	Maravalli kizhangu (Tam.)	132
Mam pazham (Mal., Tam.)	278	Marchawangum (Kash.)	157, 218
Mampuli (Mal.)	238	Maredu pandu (Tel.)	244
Mamsa (Kan.)	410	Mari (G.)	233
Mamsamu (Tel.)	410	Mari (H.)	460
Manakodra	18	Maricha	233
Manakund (Mar.)	136	Marking nut	554
Manal keerai (Tam., Mal.)	480	Marpoo (Tel.)	356

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Marri pandu (Tel.)	246	Mentiya soppu (Kan.)	79
Marsilea minuta	112	Menthulu (Tel.)	223
Marutus (Kash.)	233	Meruval (Mal.)	357
Mas (P.)	410	Mestapat (B.)	84
Masarai (Tam.)	356	Mete (vera) (B.)	409
Mashaa'ly al (Kash.)	137	Meth (P.)	223
Mashkalair dal(B.)	31	Methi (G., Kash., Mar.)	79
Masoor (B.)	38	Methi(B.,G.,H.,Mar.,O.)	223
Masoor Moha (A.)	38	Methika	79, 223
Mastocembellus armatus	314	Methi sag (B.,H.,O.)	79
Masura (O.)	38	Mexican husk tomato	307
Masur bele (Kan.)	38	Michai (B.,H.)	472
Masur dal (G., H., Mar.)	38	Milagai (Tam.)	218
Masur (Kash.P.)	38	Milagu (Tam.)	233
Masur parippu (Mal.)	38	Milk, ass's	418
Mata (H.)	588	Milk, buffalo's	419
Matar (B.,H.)	40,42	Milk, cow's	420
Matara (O.)	40,42	Milk, goat's	421
Mata sag	481	Milk, human	422
Matasura, whole fruit	568	Milo	4
Math (Mar.)	49	Mimusops hexandra	578
Matha che deth (Mar.)	50	Minapa pappu (Tel.)	31
Mathalam pazham (Mal., Tam.)	296	Minusops elengi	510
Mathan (Mal.)	178	Mirapa Kayi (Tel.)	157., 218
Mathan elakal (Mal.)	102	Mint	94
Mathan vithugal(Mal.)	550	Mirch (H.)	218
Matki (Mar.)	39	Mirchan (P.)	218
Mattu eraichi (Tam.)	398	Mirchi (Mar.)	218
Maulsari (H.)	570	Mire (Mar.)	233
Mavina hannu (Kan.)	278	Mirgah(O.)	359
Mavina hasisunthi (Kan.)	121	Mirgichara (O.)	293
Mavinayaki (Kan.)	170	Miriyalu (Tel.)	233
Mayalu	93		
Meat of narrow snouted crocodile	587	Misur pappu (Tel.)	38
Meeth (Kash.)	223	Mitha lebu(B.)	270
Megalops cyprinoides	340	Mitha limbdo(G.)	77
Meka karjamu (Tel.)	408	Mitha limbu (G.)	270
Meka mamsamu (Tel.)	406	Mitha neebu (H.)	270
Meka palu (Tel.)	421	Mitta (Tel.)	353
Melon, musk	280	Moang (Kash.)	33
Melon, water	281	Mocha (B.)	174
Melluni padam (Tel.)	462	Mocha chengdi (B.)	354
Menasina Kayi (Kan.)	218	Mochai (Tam.)	33
Mendak (H.)	585	Modakathan keerai (Tam.)	95
Mendha kalija (O.)	409	Moduga (Tel.)	517
Mentha spicata	94	Mogang vavval (Tam.)	370
Menthe (Kan.)	223	Moha millet	3
Menthi Koora (Tel.)	79	Mohari chipan (Mar.)	97

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Mohori(Mar.)	206	Mujlak (Kash.)	103, 129
Mokka Jonnalu (Tel.)	4, 5	Mukarrate keerai (Tam.)	96
Momordica charantia	139	Mukthajhuri (B.)	88
Momordica cochinchinensis	163, 519	Mula (B.,G.,Mar.,O.)	129
Momordica dioica	160	Mulaga akulu (Tel.)	78
Mo'nd (Kash.)	165	Mulaga kada (Tel.)	151
Mongam shede (Kan.)	384	Mulaka	103
Monjhak (Kash.)	87	Mulaku (Mal.)	218
Monkeyjack	167	Mulam pazham (Tam.)	280
Mooli-ka-sag (B.,G.,H.,Mar.)	103	Mulankoombu (Mal.)	468
Moongi (P.)	34	Mula pal (Mal.)	422
Moongil arisi (Tam.)	453	Mulaari (Mal.)	453
Moongil Kuruthu (Tam.)	468	Mulberry	282
Moong phali(H., Kash., P.)	203	Mulchari	570
Moor sanga	517	Muli(H.,P.)	129
Moothari (Mal.)	8	Mulla dantu (Kan.)	53
Moran-cundai (Tam.)	340	Mullagathi (Tam.)	458
Moras (Mar.)	471	Mullujeerangi (Kan.)	458
Morus	282	Mullakare (Kan.)	495
Mori (P.)	359	Mullan-cheru-cheera (Mal.)	53
Moringa oleifera	78,151,152	Mullangi (Kan., Mal., Tam.,Tel.)	129
Morrul (H.)	386	Mullangi akulu (Tel.)	103
Moru(Mal., Tam.,)	424	Mullangi ilaigal (Mal., Tam.,Kan.)	103
Mosaru (Kan.)	423	Mulla thotakoora (Tel.)	53
Mosu (Tel.)	320	Mullet	360
Moti (G.)	100	Mullugo Sp	480
Moti (Pearl)	363	Mullu keerai (Tam.)	53
Moth (H.)	39	Multi jella (Tel.)	311
Moth beans	39	Munakka (Tel.)	253
Motu limbu (G.)	269	Munakkeerai (Tam.)	495
Mowda (Tam.)	577	Mundiringa (unakku) (Mal.)	258, 300
Mou (B.)	440	Mundiriparuppu (Tam.)	192
Mrigal (B.)	359	Mundiri pazham (Mal.)	257
Muang (Kash.)	34	Mundri pazham (Tam.)	260
Muchchugoni(Kan.)	494	Mung (B.,H.,Mar.)	34
Mucuna capitata	456	Mungi-di-dal (P.)	35
Mucuna prusita	456	Murdi (Mar.)	343
Mudhi (O.)	15	Murga (H.,P.)	405
Mudi (B.)	15	Murgi (B.)	405
Mudi bommiday (Tel.)	314	Murgi-ka-anda (H.)	402
Mung (Mar.)	34	Murgi nu indu (G.)	402
Muga (O.)	34	Muringa ela (Mal.)	78
Mug dal (B., Mar.)	35	Muringakkai (Mal. Tam.)	151
Mugil corsula	348	Murmura (G.,H.,Mar.)	15
Mugil oeur	360	Murmuralu (Tel.)	15
Mugil parsia	367	Murraya koenigii	77
Mugil tade	318	Murum sanga	518

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Murungai keerai (Tam.)	78	Nalleru (Tel.)	493
Musambi (B.,G.,Mar.,H.)	275	Nandu (Mal., Tam.,)	335
Musa paradisiaca	245	Nangu (Kan.)	387
Musa paradisicum	116	Narel (Mar.)	195, 196
Musa sapientum	175, 176, 177	Naral pani (Mar.)	198
Mushali	521	Naratega (Tel.)	512
Mushi	361	Narange (Tel.)	275
Mushroom	532	Naravalli (Tam.)	572
Musikinu jola (Kan.)	5, 6	Narikela	195, 196, 197, 198, 199
Mussel, fresh water	362	Narikel doodh (B.)	197
Mustard leaves	97	Narippayir (Tam.)	39
Mustard seeds	206	Nariyal (G., H.)	195, 196
Musukkottai pazham (Tam.)	282	Nariyal-ka-doodh (H.)	197
Musumbe (Mar.)	273	Nariyal-ka-pani (H.)	198
Musur (Kash.)	38	Narjeel (Kash.)	195
Mut (G.)	39	Narkal (Kan.)	209
Muth (Kash.)	46	Narkel (B.)	195
Muthisaga (O.)	470	Nashpati (B.,G.,H.,Mar.,O.,P.)	291
Muthunga (Kan.)	517	Nasukumi (Kan.)	456
Mutta kose (Mal.)	66	Nasturtium officinale	506
Muttai kose (Tam.)	66	Natarevachirmi (Kan.)	535
Button	410	Nate-danta (B.)	50
Muyunna (B.,H.)	495	Nate sag (B.)	48
Myristica fragrans	227, 228	Natupasupu (Tel.)	535
Mysore paruppu (Tam.)	38	Natuvali (Tam.)	534
Mystus seenghala	311	Nayibela (Kan.)	505
Mystus vittatus	393	Nedumanangu (Mal.)	312
Mytilus viridis	327	Neembu (H.)	273
		Neembu ka chilka (H.)	226
Nachni (Mar.)	8	Neem fruit	571
Nachukottai keerai (Tam.)	482	Neem-ke-patte (H.)	484
Nadia (O.)	195	Neem leaves	403
Nadishaka Nalani Bhaji	86	Neem pata (B)	484
Nadur (Kash.)	516	Neem phal (B.)	571
Naga pazham (Mal., Tam.)	266	Neera	450
Nagarvelna pan (G.,)	62	Neerugubbi (Tel.)	477
Naharm (H.)	357	Neerulli (Tel.)	123
Naicornia (Mal.)	456	Negalu (Kan.)	98
Naim (H.)	359	Nehare (B.)	326
Nalichi bhaji (Mar.)	85	Neithirandi (Mal.)	374
Nali simba (O.)	174	Nelapalai (Mal.)	485
Nalita	84	Nelathati gadda (Tel., Kan.)	521
Nalite saga (O.)	84	Nellikai (Kan., Mal., Tam.,)	239
Nallabalasu (Tel.)	563	Nelumbium nelumbo	169, 461, 516
Nalla jeedi ginjalu (Tel.)	554	Nephelium litchi	271
Nallamathi (Mal.)	364	Nephelium longana	272
Nalla sandawah (Tel.)	369	Neralai (Kan.)	266

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Neredu pandu (Tel.)	266	O'bej (Kash.)	59
Neringil (Mal.)	98	Ochen sanga	519
Nerringi (Tam.)	98	Ochu (Cherutharam) (Mal.)	414
Netpavalam (Tam.)	458	Ochu (Valliatharam) (Mal.)	415
Nevy (Mal., Tam.,)	436	Oil sardine	364
Neyyi (Tel.)	436	Okra	166
Nierinagan puli	508	Ol (B.)	134
Niger seeds	207	Olkapi	144
Nilakkadalai (Mal., Tam.,)	203	Olkopi (B.)	165
Nilappanai kizhangu (Tam.)	521	Oma (Kan.)	231
Nilopal (G.)	542	Omakai (Mal.)	207
Nim (P, H.)	484, 571	Omakaya (Mal.)	172
Nimba	484	Omum (Tam.)	231
Nimbe (Kan.)	273	Onion, big	122
Nimbe sippai (Kan.)	226	Onion stalks	171
Nimbha (P.)	273	Onthalaigasu (Kan.)	120
Nimma pandu (Tel.)	273	Onva (Mar.)	231
Nimma patra (O.)	484	Oole (Kash.)	125
Nimma thokku (Tel.)	226	Oolum (Tam.)	341
Nirmulli (Tam.)	477	Ophiocephalus punctatus	353
Nishapana	32	Ophiocephalus striatus	386
Nisorha	572	Opisthopterus tardoore	392
Nisorha flowers	534	Orange	283
Njerinagan puli (Mal.)	508	Oryza sativa	9, 11, 13, 14, 15
Nol-kol (G., Mar.)	165	Otolithes ruber	345
Nona (B.)	249	Ovupara (Mal.)	342
Nona atwa (H.)	249	Oyster nut	545
Noone (Tel.)	438		
Noone-kavallu (Tel.)	364	Paa'rimal (Kash.)	178
Noorie (P.)	385	Pabda (B.)	365
Notopterus chitala	333	Pacharisi keerai (Tam.)	485
Notopterus notopterus	336	Pachyrrhizus angulatus	564
Notya (B.)	49	Padakalanya pal (Mal.)	432
Nugge kayi (Kan.)	151	Padavala (Kan.)	181
Nugge yele (Kan.)	78	Padavalanga (Mal.)	181
Nullatan (Tam.)	317	Padval (G.)	173
Nuraigenaru (Kan.)	507	Padma-danta (B.O.)	516
Nurkal (Kan.)	577	Paduwal (Mar.)	487
Nutmeg	229	Padwal (Mar.)	181
Nurunnakilangu (Mal.)	507	Paflu (Kash.)	112
Nutmeg rind	230	Paichalai (Tam.)	364
Nuvvulu (Tel.)	201	Pachwai (A.)	447
Nyadalehuna (Kan.)	523	Paida (O.)	196
Nymphaea nochiali	464, 522, 542	Paida pani (O.)	198
Nyomb (Kash.)	269, 273	Painee meen (Tam.)	322
Oat meal	459	Pakku (Tam.)	189
		Pakodi	18

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Palaemon	354	Pangas (B.)	366
Pala (Mar.)	341	Pangasius pangasius	366
Pala gunda (Tel.)	115	Pangsa (H.)	366
Palak (G., H., Kash., Mar., P.)	110	Panicum miliaceum	7
Palak deth (Mar.)	111	Panicum miliare	16
Palakoora (Tel.)	110	Panikakharu (O.)	137
Palakoora kada (Tel.)	111	Pani nariyal (G.)	198
Palak-ki-dandi (H., P.)	111	Paninis champa (Mal.)	580
Palandu	123, 171	Pani phal (B.)	188
Palanga nada (O.)	111	Panirak (H.)	499
Palang sag (B., O.)	110	Pani singhara (O.)	188
Pala pazham (Tam.)	264	Panivaragu (Mal., Tam.,)	7
Pala podi (Tel.)	43	Paniyala (B.)	573
Palisa (Tam.)	293	Pan-ka-pata (H.)	62
palasa (Tel.)	341	Panna keerai (Tam.)	486
Palasha	517	Panneeralai hanu (Kan.)	302
Palas (B., Mar., Mal.)	517	Panni iraichi (Mal., Tam.)	412
Paliya (Kan.)	341	Pannir koyya (Tam.)	302
Pal katti (Mal., Tam.)	427	Pantar mangso(B.)	406
Palleru (Tel.)	98	Pentar mettle (B.)	408
Palli Kora (Mal.)	345	Papa	574
Palmyra fruit, ripe	285	Papaver somniferum	235
Paloemus carcinus	331	Papaya (H., Mar.)	172
Palong danta (B.)	111	Papaya (G.)	207
Pal thool (Mal., Tam.)	433	Papaya, green	172
Paluppak kai (Tam.)	160	Papaya, ripe	207
Paluva (Mal.)	341	Papayi (G.)	172
Pambole (Kan.)	376	Papdi (G)	150
Pamikara (Mal.)	575	Papita (H., P.)	172, 207
Pampara panasa (Tel.)	298	Papnus (G., Mar.)	298
Pan (B.)	62	Pappali (Tam.)	207
Pana (O.)	62	Pappali kai (Tam.)	172
Panai nungu (Tam.)	286	Pappasi (Kan.)	336
panam nungu (Mal.)	286	Pappu koora (Tel.)	100
Panar (H.)	575	papta (Mar.)	33
Panasa (Tel.)	158	Papur (H., Mar.)	574
panasa (O., Tel.)	264	Paraga (Tel.)	379
Panchadara (Tel.)	439	Parakotta (Mal.)	272
Panchasara (Mal.)	439	Parangi(Kan.)	172
Panchi (Mal.)	562	Parangi ilai (Tam.)	102
Pan-da-patta (P.)	62	Parangikkai (Tam.)	178
Pandhara bhopla (Mar.)	141	Parasa (Tam.)	517
Pandi mamsamu (Tel.)	412	Paratephusa spinigera	334
Pandola (G.)	181	Parsnip	124
Pandu chapa (Tel.)	322	Parsey, fresh	367
Paneer (B., G., H., P.)	427	Parsey, dried	368
Panasakatha (O.)	158	Parsley	99

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Paruppu keerai (Tam.)	100	Pendalamu (Tel.)	120
Parwal (H.)	173	Pendra (O.)	575
Parwalne pan (G.)	487	Pennisetum typhoideum	1
Parwar sag (H.)	487	Pepe (paka) (B.)	207
Parwar (Mar.)	173	Pepper, dry	232
Parwar	173	Perakka (Mal.)	261
Pasalai keerai (Tam.)	110	Perandai (Mal., Tam.)	493
Pasalai thandu	111	Perar	575
Pasali keerai (Mal.)	494, 110	Periambal(Mal.)	523
Pasarai keerai (Tam.)	488	Pericham pazham (Tam.)	255
Pasipayir (Tam.)	34	Persea americana	243
Paspalum scrobiculatum	18	Perseadrymifolia	191
Passiflora edulis	288	Persimmon	292
Passion fruit	288	Perina (Mal.)	154
Pastinaca sativa	124	Peru (Mar.)	261
Pasum pal (Mal., Tam.)	420	Perugu (Tel.)	423
Pasupu (Tel.)	237	Perumvalli kizhangu (Tam.)	120
Pat gobee	66	Perundai (Kan.)	493
Pati(Mar.)	171	Perungayam (Mal., Tam.)	215
Patilebu (B.)	269	Peruval (Kan.)	357
Patol (B.)	173	Pesalu(Tel.)	34
Patolam (Mal.)	487	Pesara-pappu (Tel.)	35
Pattani (Mal., Tam.)	40,42	Pesi(O.)	205
Patua sag	489	Pesiya yelu michai(Tam.)	269
Patulika	173	Pesta (B.)	208
Paunia puiee (O.)	339	Petha (H.,P.)	137
Pavakkai (Tam.)	140	Petroselinum crispum	99
Pavuramu (Tel.)	411	Peucedanum graveolens	109
Payatham paruppu (Tam.)	35	Peucedanum nagpurensse	119
Payra (B.)	76	Phalsa	293
Peaches	290	Phanas (Mar.)	158
Pearl millet	1	Phanas (G.,Mar.,)	264
Pears	291	Phanasi (G.)	43
Peas,	41, 40	Phandayat (Mar.)	417
Peechinga (Mal.)	180	Pharangi (Kan.)	207
Pedda chikkudu (Tel.)	143	Pharasbee (Mar.)	155
Pedda-polika (Tel.)	357	Pharaskoli (A.)	293
Pedda kalinga (Tel.)	528	Phaseolus aconitifolius jacq.	39
Peddbikki (Tel.)	574	Phaseolus aureus, Roxb	34, 35
Pedi (Kan.)	378	Phaseolus calcaratus	465
Pedwa (Mar.)	378	Phaseolus coccineus	138
Peepal (H.)	214	Phaseolus vulgaris	43, 155
Peetha (Tel.)	335	Philomachus pugna, Linn.	413
Pellona brachysoma	339	Phoenix dactylifera	254
Pempe (Kancha) (B.)	172	Pholi (H.)	336
Penaeus sp.	371	Phool dhok (H.)	353
Pend (Mar.)	204	Phoolgabee sag (H.,Mar.)	68

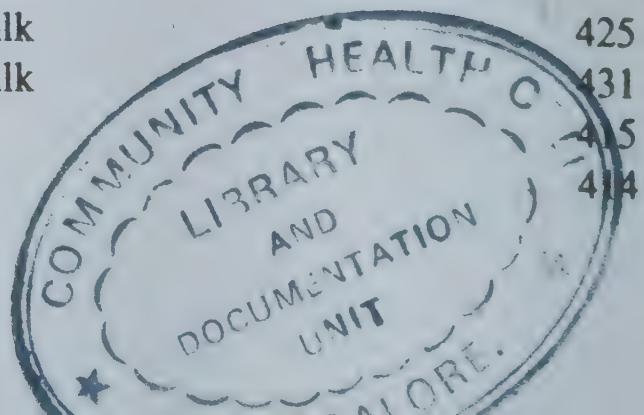
Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Phool-kopi (B.)	68	Plantain stem	177
Phopti (Mar.)	250	Plum	295
Phul gobi (G.,M.,Kash.,Mar.,O.,P.)	144	Podalangai (Tam.)	181
Phutana (G.,Mar.)	30	Podana patra (O.)	94
Phuti kakudi (O.)	145	Podduthirugudu puvvu ginzalu (Tel.)	211
Phutka chattoo (Rugroo)	533	Pogada	570
Phyllanthus distichus	263	Pohe (G., Mar.)	14
Physalis ixocarpa	307	Poi (B.,H.,Mar.)	93
Physalis peruviana	250	Polygonum plebijum	470
Piaja (O.)	123	Polynemus paradiseus	391
Piaja sandha (O.)	171	Polynemus tetradactylus	373
Piccuu (O.)	290	Pomaipidukkam (Tam)	456
Pigeon	411	Pomegranate	296
Pigeon pea	44	Pomfret, black	369
Pijuli (O.)	261	Pomfret, white	370
Pila globosa	415	Ponnagantikoora (Tel.)	101, 496
Pila pinju (Tam)	158	Ponnanganni (Mal., Tam.)	101
Pilliadugu (Tel.)	456	Poogiphalam	189
Piludi (G.)	92	Poola poo (Mal.)	540
Pindana	527	Pooli kuchi (Kan.)	386
Pine apple	294	Poonaranga (Mal.)	269
Pinduparighamu (Tel.)	579	Poosinikai(Tam.)	137
Pingu(Kash.)	7	Poozhan (Mal.)	343
Pink beans	174	Popai (Mar.)	207
Pinus gerardiana	193	Poppy seeds	235
Pipal tree figs	576	Popta (G.)	250
Pipal-ka-pakua (H.)	576	Poracalu (Tel.)	312
Piper betle	62	Pori (Kan., Mal., Tam.,)	15
Piper nigrum	232	Pork	412
Pipul (B.)	214	Porodumer (Mar.)	154
Piralo (B.)	575	Portulaca oleracea	100
Pirkkankai (Tam.)	180	Portulaca sp	488
Piriyahalim (P.)	506	Poruku (Tel.)	566
Pista (G.,H.,Kan.,Mal.,O.,P.,Tam.,Tel.)	208	Poruva (Tam.)	312
Pistachio nut	208	Post dana (H.)	235
Pistacia vera	208	Posto (B.)	235
Pisum sativum	41	Potala (O.)	173
Pithacellobium dulce	267	Potalam (Mal.)	173
Pitiurti (Mar.)	376	Potato	125
Pitwa (H.)	84	Potato leaves	490
Piyaj (bilati) (B.)	168	Pothiraiachi (Mal.)	399
Piyal (B.)	577	Potla kayi (Tel.)	181
Piyal	209, 577	Potol sag (B.)	487
Piyal seeds	209	Pottakavalam (Mal.)	544
Piyaz kali(B.)	171	Pottaikavalam (Tam.)	544
Plantain flowers	175	Pottu kadalai (Tam.)	30
Plantain, green	176	Praan (Kash.)	168

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Pravu (Mal.)	411	Puvam (Mal.)	566
Prawn	371	Puvathipuvam (Tam.)	566
Prunes	297	Puvatti (Tam.)	272
Prunus amygdalus	190	Puzhakkala (Tam.)	373
Prunus armeniaca	241	Puzhungalari (Mal.)	10
Prunus cerasus	252	Puzhungalarisi (Tam.)	10
Prunus domestica	295	Pyara (B.)	261, 411
Prunus persica	291	Pyaz (B.,H.)	123
Prunus salicina	297	Pyaz (H.)	171
Pryanguthene	3	Quince	299
Pseudosciaena coibor	344	Raazmaha (Kash.)	43
Psidium cattleyanum	262	Racha usirikayi (Tel.)	263
Psidium guajava	261	Radish, white	126
Puchakayi (Tel.)	281	Radish leaves	103
Pudhina (B.,H.,Kan.,Mal., Mar.,P.,Tam.,Tel.)	94	Ragi	8
Pudynu (Kash.)	94	Ragi (Kan.)	8
Puff ball mushroom	533	Ragulu (Tel.)	8
Puli (Mal., Tam.)	236	Rai (G.,H.,P.)	206
Puliara keerai (Tam.)	491	Rai avala (Mar.)	263
Pulichai keerai(Tam.)	84	Rainuzad (G.)	105
Puli ilaigal (Mal., Tam.)	113	Raisins	300
Pulin kuru(Mal.)	549	Raja amba (O.)	249
Pulishinta (Tel.)	479	Rajagira leaves	51
Pulivanji (Tam.)	508	Rajakeerai (Tam.)	51
Puliyankottai (Tam.)	549	Rajakeera seeds	463
Pullam purarigida (Kan.)	569	Rajmah	43
Pullan (Mal.)	379	Rajmah (H.)	43
Pulli (O.)	336	Rajika	8
Pummelo	298	Rala (Mar.)	3
Pumpkin	178	Ral kang (G.)	3
Pumpkin flowers	179	Ramaphala (Kan.,Tel.)	249
Pumpkin leaves	102	Ramphal (G.,Mar.)	249
Pumpkin seeds	550	Ramsita pazham (Tam.)	249
Punarnava (B.,Tel.)	96	Ram. til(B.)	207
Pundharighentuli (Mar.)	494	Rana tigrina	585
Pundi(Kan.)	84	Randhuni (B.)	144
Pungi keerai	48	Randhunisag (B.)	69
Punica granatum	296	Randia uliginosa	575
Punnaku keerai (Tam.)	492	Ranga alu(B.)	130
Punni kowu (O.)	340	Rangalusag (B.)	501
Pura (Tam.)	411	Ranmakka (Mar.)	459
Purunisag (O.)	100	Ranshenari (Mar.)	458
Puti	372	Rape leaves	106
Putalika	487	Rape plant stem	105
Putnala pappu (Tel.)	30	Raphanus sativus	102, 104, 126, 473
Puttiah (O.)	376		

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Rasbari (H.,P.)	250	Ruee (B.)	377
Rashun (B.)	224	Ruff and Reeve	413
Rasi(O.)	201	Ruhan (Kash.)	224
Raspberry	301	Rumex vesicarius	58
Rastrelliger kanagurta	355	Rupa patia (B.)	376
Rasuna (O.)	168, 224	Rusbhary (H.)	301
Ratalu (Mar.)	501	Ruwangan (Kash.)	185, 306
Ravai (Tam.)	24		
Ravas (Mar.)	373	Saap (Mar.)	414
Ravi pandu (Tel.)	576	Sabarjil (Mal.)	291
Rawa (Kan.,Mal.,Tel.)	24	Sabba akki (kan.)	446
Ray	374	Sabbo (B.)	446
Rayan	578	Saboo daana (Kash)	446
Red ants (with eggs)	588	Subsige (Kan.)	109
Red gram dhal	44	Sabu dana (G.,Mar.)	446
Red gram, tender	45	Saccharum officinarum	439, 441
Regu pandu (Tel.)	310	Saccobranchus fossilis.	385
Reshmichettu (Tel.)	282	Safaid murga (H.)	497
Reshmehattine huvu (Kan.)	540	Safar chand (Mar.)	240
Reuchini danta (B.)	535	Safarjan (G.)	240
Revand chini (H.)	535	Safed kaddu (H.)	186
Rhepti (Mar.)	387	Safflower leaves	108
Rheum emodi	535	Safflower seeds	210
Rhi (P)	193	Sagadekendala (Kan.)	566
Rhinoptera sewelli	374	Saggubiyyam (Tel.)	446
Rhodomyrtus tomentosa	581	Sagiyimirchi (H.)	157
Rhubarb stalks	535	Sago (H., Mal.)	446
Ribbon fish, fresh	375	Sag Sarsoon (H.)	107
Rice bean	465	Sagu dana (O.)	446
Rice bran	13	Saijan-ki-phalli (H.)	151
Rice flakes	14	Saijan patta (H.)	78
Rice parboiled (Hand-pounded)	9	Sajana chhuin (O.)	151
Rice, parboiled (milled)	10	Sajje (Kan.)	1
Rice, puffed	15	Sajna danta (B.)	151
Rice, raw (Hand-pounded)	11	Sajna sag (B.,O.)	78
Rice, raw (milled)	12	Sakkar	439
Ridge gourd	180	Sakkaravalli kizhangu (Mal., Tam.)	130
Ringna (G.)	142	Sakkare (Kan.)	439
Rohu (H.,O.)	377	Sakkaria (G.)	130
Rose apple	302	Sakkarkamali (P.)	130
Roselle seeds	547	Sakothina soppu (Kan.)	59
Roti (B.,H.)	27	Salaa'd (Kash.)	90
Round gourd	184	Salad (H.)	90
Royya (Tel.)	371	Salad pata (B.)	90
Ru'ang (Kash.)	220	Salat (G.)	90
Rubus fruiticosus	557	Salatu (Tam.)	91
Rubus wallichii	301	Salmali	540

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Sama (G.)	17	Sarunada (O.)	147
Sama (P.)	566	Sarupipali (O.)	214
Sama gadde (Kan.)	119	Sarwali (P.)	497
Samai (Kan.)	17	Sarwar (G.)	540
Samai (Kan., Tam.)	16	Sasha (B.)	149
Samp machili (P.)	314	Sasikad (G.)	457
Samuk (B.)	414, 415	Sasuve (Kan.)	206
Sana	537	Sasuve yele (Kan.)	97
Sanaga akulu (Tel.)	62	Satapushpi	109
Sanagalu (Tel.)	28	Satalu	290
Sanaga pappu (Tel.)	29	Satha kuppai (Tam.)	109
Sanai-ka-phool (H.)	537	Saur (Mar.)	540
Sanalu (Kan.)	537	Sauropus androgynus	71
Sanga-ka-phal	536	Sava (Mar.)	16
Sangtar (Kash.)	284	Savala (Tel.)	376
Sankalu (B.,H.)	564	Savalai (Tam.)	376
Sankru (H.)	458	Sawank	17
Sannappu sanal (Tam.)	537	Sazzalu (Tel.)	1
Sannhemp flowers	537	Schleichera Trijunga	566
Sant (H.)	96	Sciane miles	337
Santara (O.)	509	Scirpus grossus	509
Santra (G.,P.)	284	Sea weeds, fresh	538
Santre (Mar.)	284	Sea weeds, dry	539
Sanwa millet	17	Sebu (Kan.)	240
Sapota	303	Sechium edule	145
Sapota (Mal., Tam., Tel.)	303	Seebe (Kan.)	261
Sapuri Anasianas (O.)	294	Seedai (Tam.)	378
Saragavo (G.)	78, 151	Seema chinta (Tel.)	267
Sarai paruppu (Tam.)	209	Seema dalimbe (Kan.)	299
Sarakadha dudha (O.)	432	Seema danimma (Tel.)	299
Sarana (O.)	378	Seema hunise (Kan.)	267
Saranti sag (H.)	101	Seemai kathirikai (Tam.)	145
Sarapappu (Tel.)	209, 577	Seemai madalai (Tam.)	299
Saravallai keerai (Tam.)	494	Seemai ponnanganni (Tam.)	496
Sardine	378	Seemapila (Tam.)	248
Sardinella fimbriata	378	Seema panasa (Tel.)	248
Sardinella longiceps	364	Seema vankayi (Tel.)	145
Sarkara	451	Seema badane (Kan.)	145
Sarkarai (tam.)	439	Seer	382
Sarli sag	495	Seetha pazham (Mal., Tam.)	304
Sarputi (B.)	379	Seethaphal	304
Sarsiyu (G.)	107	Seethaphalam (Kan., Tel.)	304
Sarson-da-sag(P.)	97	Segedi (Kan.)	371
Sarson-ka-sag (H.)	97	Selakku (Kan.)	340
Sarson-ki-dandi (H.)	105	Sem (H.)	33, 138
Saru (O.)	119	Semai (B.)	25
Sarue (O.)	74	Semal-ka-phool (H)	540

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Semecarpus anacardium	554	Shingala (Mar.)	328
Semiya (Mal., Tam., Tel.)	25	Shingara (H.)	188
Semari attin eeral (Tam.)	409	Shingoda (G.)	188
Semolina	24	Shivda (Mar.)	325
Senai kizhangu (Tam.)	134	Shiv jata (G.)	460
Sendurkam (Tam.)	108, 210	Shobanjana	151
Sennal (Tam.)	351	Shol (Kash.)	3
Seo (P.)	240	Shol (B.)	386
Seppam ilaigal (Tam.)	74	Shon (B.)	537
Seppam kizhangu (Tam.)	119	Shorangi (Tel.)	343
Seppanthandu (Tam.)	147	Shravanghevda (Mar.)	43
Serranus lanceolatus	323	Shrimp	381
Sesame seeds	201	Shringota	188
Sesamum indicum	201	Shunti (Kan.)	225
Sesbania aegyptiaca	524	Shyama	17
Sesbania cannabina	457	Sibjhul (B.)	95
Sesbania grandiflora	47	Siddha chowl (B.)	10
Sessilis (A)	496	Siju (O.)	493
Setaria italica	3	Silk cotton flowers	540
Sev (B., H., O.)	240	Sillago sihama	343
Shaddock	298	Silver belly	383
Shahtoot (H.)	282	Sim (B.)	33
Shaid (H.)	440	Sim	138
Shakarkand sag (H., P.)	130, 501	Simai (O.)	25
Shakarkand (H.)	130	Simba (O.)	143
Shalgam (H.)	133	Simla alu (B., H.)	132
Shalgam-ka-sag (H.)	114	Simul (B.)	540
Shaluk (B.)	523	Sinduar sag (wild)	497, 498
Shama (H.)	17	Singala (Mar.)	311
Shamagadde yele (Kan.)	74	Singhala (Mar.)	384
Shamul (Mar.)	17	Singhara (Tam.)	188
Shamula (B.)	17	Singhi (B., H., O.)	385
Sharifa (H., P.)	304	Singhri (H.)	267
Sharisha	97	Sirange soppu (Kan.)	470
Shark	380	Sirka	579
Shede (Kan.)	311, 328	Sirru (Tel.)	56
Shelvant (Mar.)	534, 572	Sirukeerai (Tam.)	52
Shepu (Mar.)	109	Sitaphal (P.)	178
Sherdina ras (G.)	451	Sitaphal (Mar., G.)	304
Shetur (G.)	282	Sitaphal de patte (P.)	102
Shevaga Pan (Mar.)	78	Sitaphal di bee (P.)	550
Shevaga sheng (Mar.)	151	Sivappu salakkeerai (Tam.)	93
Shevaya (Mar.)	25	Siwain (H.)	25
Shevige (Kan.)	25	Skimmed milk	425
Shikhamula	67	Skimmed milk	431
Shimle-di-mirch (P.)	157	Snail, big	445
Shindishirani (Mar.)	286	Snail, small	444



Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Snake gourd	181	Strinu doodh (G.)	422
Sohr (Mar.)	386	Stromateus sinensis	370
Sola (O.)	386	Suan (O.)	16
Solanum melongena	142	Suaeda nudiflora	471
Solanum nigrum	92	Suaralu (B.)	507
Solanum torvum	182	Suaralu (H.)	136
Solanum tuberosum	490, 125	Suar ka gosht (H.)	412
Solanum xanthocarpum	529	Suduma (Tel.)	324
Sole	386	Sugar apple	304
Sole (Malahar)	387	Sugar cane juice	451
Sonchal sag	499	Suggalahtubontu (Tel.)	323
Sondekai (Kan.)	111	Suha najna	78
Song	520	Sukar mangso (B.)	412
Sooji(B.,H.)	24	Sundakai, (Tam)	182
Soor da mas (P.)	412	Sukki soppu (Kan.)	58
Soorah (Tam.)	380	Sundakka (Mal.)	182
Sopari(G.)	189	Sunflower seeds	211
Sora chapa (Tel.)	380	Supari (B.,H.,P.)	189
Sorakay yele (Kan.)	63	Supra	499
Sorakaya (Tel.)	141	Suraikai (Tam.)	141
Sorekai (Kan.)	141	Surai kayi	186
Sorakaye akulu. (Tel.)	63	Suraiilagal (Tam.)	63
Sorisa (O.)	206	Suran (G., Mar.)	134
Sorisa danta (B.)	105	Surguja	207
Sorisa nada (O.)	105	Surjamukhi (B.,P.)	211
Sorisa sag (B.)	97	Surmai	388
Sorisa sag (B.,O.)	107	Surya kamal (G.)	516
Sorse (B.)	205	Surva	109
Sottai kala (Tam.)	555	Surya mukhi (H., Mar.)	211
Sour cream	423	Suryakanthi (Mal., Tam.)	211
Southe kayi (Kan.)	149	Sus cristatus Wagner	412
Sowa (B.,H.)	109	Susni sag (B.)	112
Soya bean	46	Sutari	465
Soya ilagal (Mal.)	500	Sutri (H)	465
Soya-ka-sag (H.)	500	Suvani bhaji (G.)	109
Soya leaves	500	Suvarna gadde (dodda) (Kan.)	134
Soya patra (O.)	500	Suvarna gadde (Kan.)	135
Spiked millet	1	Suvarnu mas (G.)	412
Spinach	110	Swet murga (B.)	497
Spinach stalks	111	Sweet potato	130
Spinacia olercea	110, 111	Sweet potato greens	501
Spinak soppu	110	Sword beans	183
Spondias mangifera	238	Syama dhan (B.)	3
Star apple	580	Syzygium aromaticum	219
Star gooseberry	263	Syzygium cumini	266
Sterculia foetida	544	Syzygium jambos	302
Starwberry	305	Table radish leaves	104

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Tabspatra	573	Telakuchu (B.)	164
Tadabuch (G.)	184	Tella kaluva (Tel.)	542
Tadgunny (Kan.)	76	Tellamanga (Tel.)	527, 558
Tadi (Mar., O.)	449	Tengra	393
Tag (Mar.)	537	Tengra (B.)	394
Tagarai (Tam.)	81	Ten thuppa (Kan.)	440
Tak (Mar.)	424	Tentuli (O.)	113, 236
Takkali pazham (Mal., Tam.)	306	Tepari (B.)	250
Takla (Mar.)	81	Tetralobar bean	541
Tal (G.)	201, 286	Tetul (B.)	236
Tal (O.)	286	Tetul, bilati (B.)	267
Talamuli (B.)	521	Tetul pata (B.)	113
Talinum triangulare	469	Thai pal (Tam.)	422
Talipot flour	460	Thakkali (Mal., Tam.)	185
Talis-patri (G., H., K.)	573	Thakkali pazham (Mal., Tam.)	306
Talimakhana (H., Mar.)	477	Thamalapaku (Tel.)	62
Tal shash (B.)	286	Thamara dumpa (Tel.)	516
Talvani (G.)	505	Thamara ginjalu (Tel.)	530
Tamarind leaves, tender	113	Thamara kada (Tel.)	169
Tamarind pulp	236	Thamara kizhangu (Mal.)	516
Tamarind seed kernel	549	Thamara thandu (Mal., Tam.)	169
Tamator (B., H.)	306	Thamara vithu (Mal.)	530
Tamarindus indica	113, 236, 549	Thandukeerai (Tam.)	49
Tambada-massa (Mar.)	377	Thkannir methan (Mal.)	281
Tambadivasu (Mar.)	96	Thany (Kash.)	434
Tamber (Kash.)	236	Tharavu (Mal.)	400
Tambra (Mar.)	347	Tharavu mutta (Mal.)	401
Tambula	62	Thauasai Muningai (Tam.)	71
Tamhat (Mar.)	573	Thatinungu (Kan.)	286
Tanduliya	53	Thati pandu (Tel.)	286
Tang (Kash.)	291	Thavala (Tam.)	586
Tantemu (Tel.)	81	Thavittu pazham (Mal., Tam.)	581
Tapioca chips	132	Thavudu (Kan., Mal., Tam., Tel.)	13
Tapra	390	Thayir (Mal., Tam.)	423
Tapsi (B.)	391	Thelimeenthayi-lee (Tam.)	385
Tar (P.)	286	Then (Mal., Tam.)	440
Taragadi (Tam.)	154	Thenai (Tam.)	3
Taravardinivel (G.)	183	Thene (Tel.)	440
Tarbuja (P.)	281	Thenga (Mal., Tam.)	195
Tarail	449	Thenga neeru (Kan.)	198
Tari (B.)	449	Thenga pal (Mal., Tam.)	197
Tarmuj (B.)	281	Thenga punnakku (Mal., Tam.)	199
Taro	119	Thenga vellam (Mal.)	198
Tartoor (Tel.)	392	Thenginikai (Kan.)	195
Tarvuja (O.)	281	Theppu meenu (Tam.)	347
Takveel (B.)	115	Tila	201
Tavaksha (Kan.)	115	Thina (Mal.)	3
Talfairea pedata	545	Thirattu pal (Tam.)	430

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Thiruta (Mal.)	348	Tringa galareola	589
Thiyya donda (Tel.)	508	Triticum aestivum	19, 20, 21, 22, 23, 24, 25
Tholthakkali (Tam.)	250	Tsaama (Kash.)	427
Thondrotte (Kan.)	370	T'ser (Kash.)	242
Thooduvalai keerai (Tam.)	502	Tshaavgi chir (Kash.)	421
Thor (B.)	177	Tsoonth (Kash.)	240
Thotakoora (Tel.)	49	Tsun'um (Kash.)	290
Thotakoora ginjalu (Tel.)	452	Tuki	582
Thotakoora Kadai (Tel.)	50	Tumki	582
Thugare bele (Kan.)	44	Tumbekai (Kan.)	183
Thup (Mar.)	436	Tumbi (Tam.)	
Thuppa (Kan.)	436	Tunari	
Thynnus macropterus	395	Tunny	
Tigo	507	Tunarika	44
Tikhori (H.)	115	Tuppaturakai (Kan.)	156
Til (B., H., Mar., P.)	201	Turbuz (B., H., Mar.)	
Tila chhattoo (H.)	532	Tur dal (Mar.)	4
Timburi (Mar.)	562	Turia (G.)	156, 180
Tinda (H., P.)	184	Turmeric	237
Tinduki (Tel.)	562	Turnip	114, 133
Tingalavari (Kan.)	43	Turrelu (Kash.)	180
Tishi (B.)	205	Turtle's meat	416
Titamarai (A.)	489	Turum sanga	521
Titaphapur (B.)	455	Tut (B., Mar.)	282
Titbaigun (B.)	182	Tutikoora (Tel.)	86
Toddy	448	Tuvar anjari (Mar.)	389
Toddy, sweet	449	Tuvaram paruppu (Tam.)	44
Tomatillo	307	Tuvara parippu (Mal.)	44
Tomato, green	185	Tuver (G.)	44
Tomato, ripe	306	Typhonium trilobatum	135
Tomul (Kash.)	12		
Tondale (Mar.)	12, 164	Udad	31
Tondekayi (Kan.)	164	Uddachi dal (Mar.)	31
Topioca	131	Uddina bele (Kan.)	31
Torai (H.)	180	Ukadello chokha (G.)	10
Torli (Mar.)	364	Ukda tandol (Mar.)	10
Tottulla (Kan.)	526	Ulassi (Mar.)	507
Toukil (Mar.)	115	Ulavalu (Tel.)	
Towar (Mar.)	382	Ulkobi (O.)	
Trachyspermum ammi	231	Ulli (Mal.)	123
Trapabispinosa	187	Ulli kadalu (Tel.)	171
Tree tomato	308	Ullipoondu (Tam.)	224
Trianthema monogyna	494	Ulli thandu (Mal.)	171
Tribulus terrestris	98	Ulutham paruppu (Tam.)	31
Trichiurus sp.	375	Uluva (Mal.)	79, 223
Trichosanthes anguina	181	Umtas (H., P.)	569
Trichosanthes dioica	487, 173	Uluva ila (Mal.)	79
Trigonella foenum graecum	79, 223	Una (Tam.)	528

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Undamulagu (Mal.)	157	Varah	412
Undee-collee (Mal.)	351	Vari (Mar.)	7
Unnipindi (Mal.)	177	Varimeen (Mal.)	382
Upakunchika	216	Variaga (Tel.)	18
Uppudu biyyam (Tel.)	10	Variyath thandu (Mal.)	535
Urad dal (H.)	31	Varutha kadala (Mal.)	30
Uri	138	Vasalicheera thandu (Mal.)	111
Urula kizhangu (Mal., Tam.)	125, 490	Vasasni kupal (G.)	468
Urula kizhangu ilagal (Mal., Tam.)	490	Vatamkottai (Mal.)	190
Usacherasa (Mar.)	451	Vatana (G., Mar.)	40, 42,
ayi (Tel.)	239	Vatchuli (Kan.)	167
chawal (H.)	10	Vathu (Tam.)	400
arugu (Tel.)	182	Vathu muttai (Tam.)	401
Usuna chaula (O.)	10	Vattu parippu (Mal.)	37
Uva	528	Vazhai kizhangu (Mal., Tam.)	116
cheera (Mal.)	90	Vazhai thandu (Tam.)	177
Uzhunnu parippu (Mal.)	31	Vazhakkai (Mal., Tam.)	176
Vaccinium leschenaultii	565	Vazha pazham (Mal., Tam.)	245
Vad (G.)	246	Vazhaapoo (Mal., Tam.)	175
Vada (Mar.)	246	Vazhuthininga (Mal.)	142
Vahmeenu (Kan.)	373	Veduru biyyam (Tel.)	453
Vakhakhapro (G.)	96	Veduru chiguru (Tel.)	468
Vaka (Tel.)	162	Veethi keerai (Tam.)	503
Vakka (Tel.)	189	Vegetable cooking oil	438
Vakudu mulaga (Tel.)	529	Vegetable ghee	437
Vakulamu (Tel.)	570	Vegetable marrow	186
Valai (Tam.)	325	Veladoda (Mar.)	216
Valathan (Mal.)	340	Velai keerai	504
Valavana (Mal.)	183	Velega pandu (Tel.)	309
Valesulu (Tel.)	207	Vella awoli (Mal.)	370
Valia atta (Mal.)	384	Vella kalada (Tel.)	315
Valia etta (Mal.)	328	Vella kadttelee (Tam.)	337, 344
Vallikizhangu ilai (Tam.)	501	Vella keerai (Tam.)	505
Valore (G.)	174	Vellam (Mal., Tam.)	441
Valpapdi (G	33	Vellambal poo (Mal.)	542
Valuga (T	325	Vella payaru (Mal.)	32
V	231	Vellarikka (Mal.)	149
V	326	Vellithalayan (Mal.)	376
V	437	Velluli (Mal., Tel.)	224
Vanaspa	326	Velvangi (Mar.)	306
Vangaravasi (Tam.)	326	Velwa-ka-topi	554
Vange (Mar.)	142	Vendakkai (Mal., Tam.)	166
Vangueria spirosa	495	Vengayam (Tam.)	123
Vanjram (Tam., Tel.)	382	Vengaya thandu (Tam.)	171
Vankaya (Tel.)	142	Venison	417
Vansh	453, 468	Venna (Mal., Tel.)	434
Varagalu (Tel)	7	Vennadevi koora (Tel.)	475
Varagu (Mal., Tam.)	18	Vennai (Tam.)	434

Foodstuff (1)	Sl.No. (2)	Foodstuff (1)	Sl.No. (2)
Venna theesina palu (Tel.)	432	Wheat flour, refined	22
Venthayam (Tam.)	223	Wheat flour, whole	21
Venthiya keerai(Tam.)	79	Wheat germ	23
Vepa akulu (Tel.)	484	White bait	396
Vepa pandu (Tel.)	571	Whole milk powder	433
Veppam pazham (Mal., Tam.)	571	Wild olive	583
Veppilai (Tam.)	484	Winged pea	541
Vera mangso(B.)	410	Winged white ants	584
Vermicelli	25	Wood apple	309
Verusanaga (Tel.)	203	Wood sand piper	589
Verusanaga pindi (Tel.)	204	Wotomba (Mal.)	16
Vettilai(Mal., Tam.)	62	Wuazu	129
Vicia faba	64, 143	Wumb (Mar.)	272
Vigna catjang	32, 76, 148	Wucka poo (Mal.)	537
Vikki pazham	583	Wushku (Kash.)	2
Vilaid yele (Kan.)	62	Wutta Collawah (Tam.)	323
Vilaiti Anchu (H.)	557		
Vilam pazham (Mal., Tam.)	309	Yam, elephant	134
Vilayithivengam (G.)	306	Yam, ordinary	135
Vilayatiphanas (Mar.)	248	Yam, wild	135
Virahi (Tam.)	386	Yangu (Kash.)	215
Vitis quadrangularis	493	Yarragogu (Tel.)	547
Vitis vinifera	257, 300	Yari. vahlay (Mal.)	356
Vitunna	497	Yavalu (Tel.)	459
Viviparus bengalensis f. typica lamarck	414	Yavam (Mal.)	2
Voliyasravu (Mal.)	380	Yede halu (Kan.)	422
		Yelachi (Kan.)	310
Waangum (Kash.)	142	Yelakki (Kan.)	216
Waghsheer (Mar.)	380	Yelnee (Kan.)	216
Wag	526	Yemme halu (Kan.)	419
Wagatta (Tam.)	575	Yenuga badam (Tel.)	544
Wakkai (Tel.)	565	Yera (Tam.)	371
Waluchi Bhaji(Mar.)	480	Yerra jella (Tel.)	394
Wallago attu	325	Yerra mosu (Tel.)	359
Walnut	212	Yoghourt	423
Wartee poolah (Mal.)	317		
Water chestnut	187	Zaamut duad (Kash.)	423
Water cress	506	Zaaphal (Kash.)	229
Water fern	474	Zeeth (Kash.)	141
Water lily, red	523	Zimi kand (H.,P.)	134
Water lily, white	522	Zinakookhard (G.)	470
Water lily flowers	542	Zinziber officinale	225
Water lily seeds	464	Zizyphus	310
Water melon seeds	213	Zizyphus jujuba	310
Wheat	20	Zizyphus rugosa	579
Wheat, Bulgar	19	Zyur (Kash.)	222

